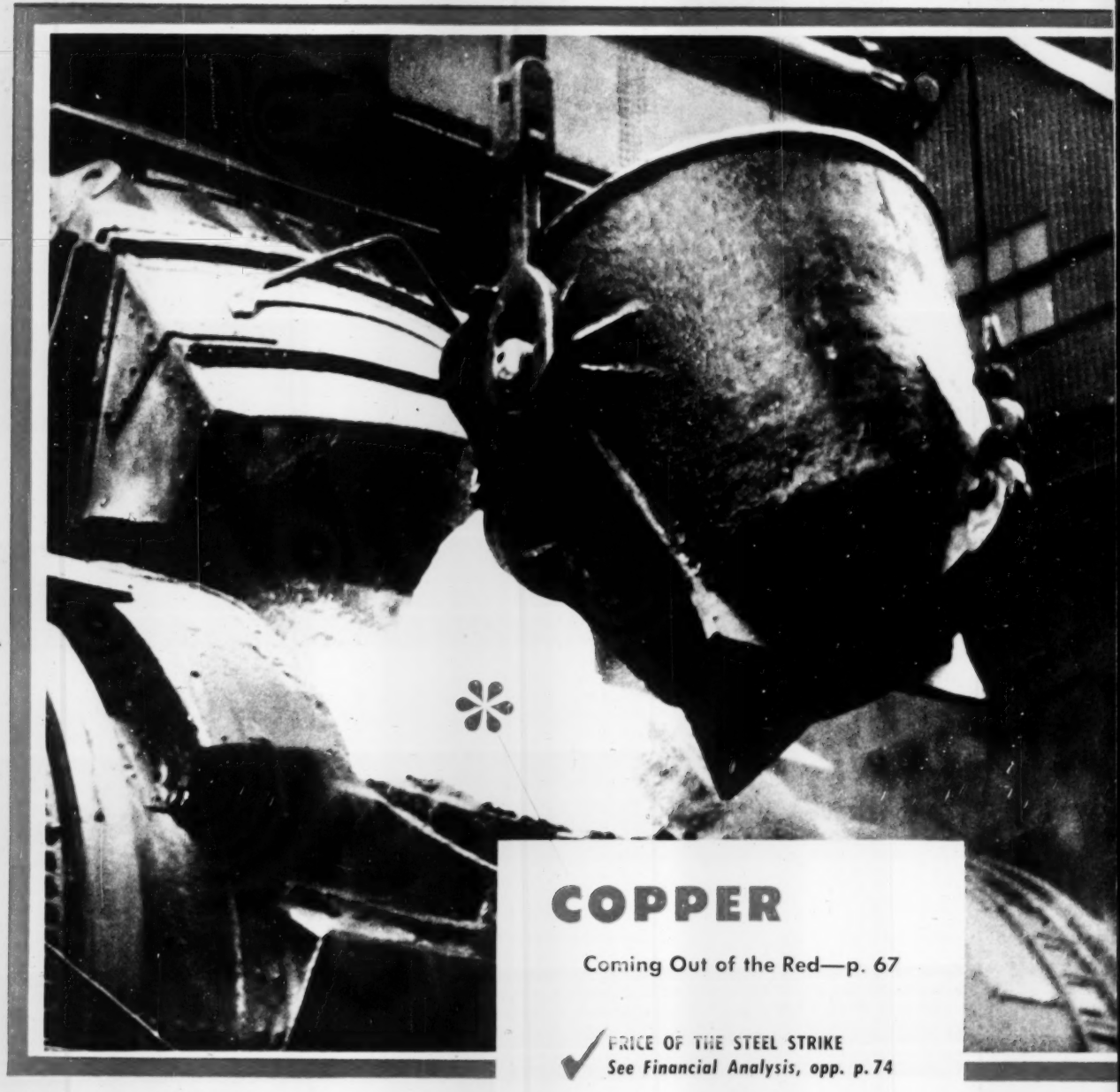
APRIL 20, 1953

STEEL

THE WEEKLY MAGAZINE OF METALWORKING



COPPER

Coming Out of the Red—p. 67

✓ PRICE OF THE STEEL STRIKE
See Financial Analysis, opp. p. 74

✓ MORE PERMANENT MAGNETS
Size, Shape Barriers Fade, p. 110

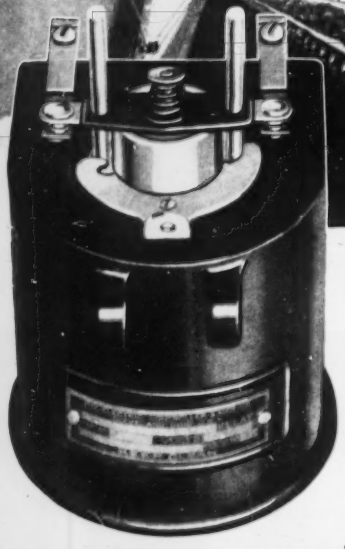
CONTENTS — PAGE 5

One of two 15-Ton Dravo Unloaders, at eastern seaboard city, both equipped with Control by EC&M.

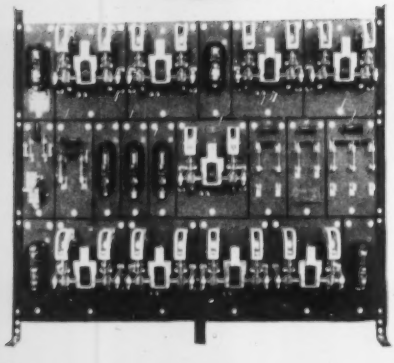
Faster Response is Yours

WITH THESE

EC&M TIME-CURRENT RELAYS



The TIME-CURRENT Acceleration Relay has only one moving part, which is magnetically centered in its short movement.



The d-c series motor speeds up quickly when lightly-loaded . . . automatically adjusts itself to a slower speed and increases motor torque when the load is heavy.

There is no other system of control which matches these series motor characteristics like EC&M TIME-CURRENT Acceleration Relays. Long-time for accelerating heavy loads shorter-time for a light load, and the relay adjustment remains *unchanged*.

This self-adjusting feature is an *exclusive* characteristic of EC&M TIME-CURRENT Control. Operators use it to advantage in taking the swing out of a load, for fast re-acceleration to full speed when coasting, and when called upon to make short, quick moves.

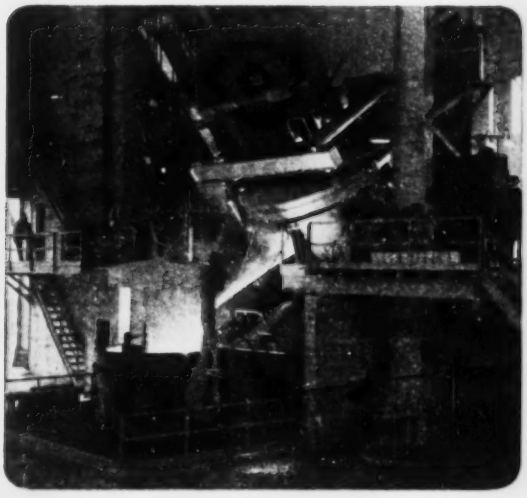
And don't overlook the fact that these relays stay in adjustment – thousands of them are in service with the original factory setting untouched.

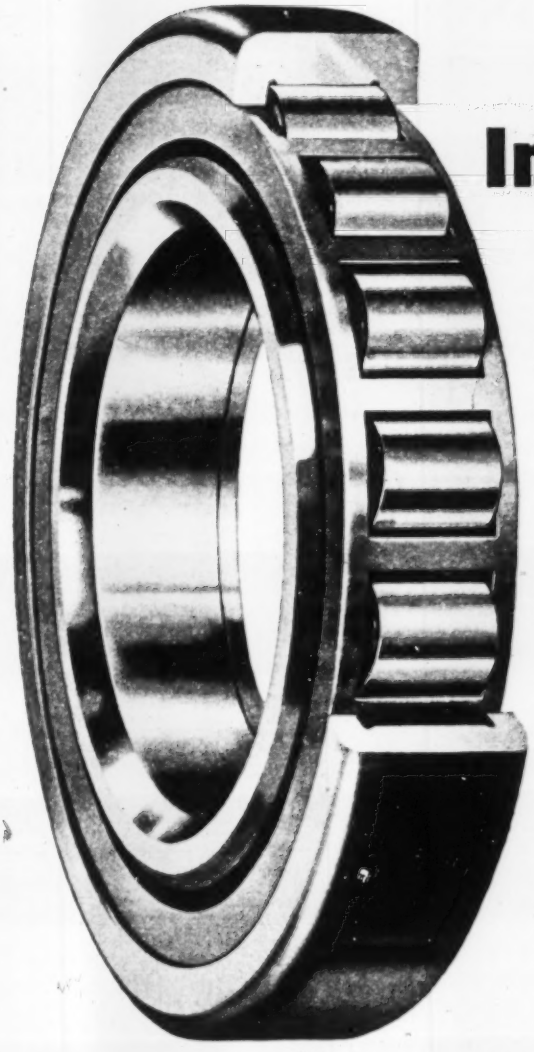
IT PAYS TO SPECIFY EC&M CONTROL

THE ELECTRIC CONTROLLER & MFG. CO.

2698 EAST 79TH STREET • CLEVELAND 4, OHIO

Electric Furnace Bearing Steel





Internally Clean... Accurately Rated

Getting rid of non-metallic inclusions is probably the toughest job that confronts any manufacturer of high-grade bearing steels. At Bethlehem we are able to hold inclusions to the minimum by using modern melting methods combined with rigid metallurgical control. And we test every heat at the critical stages of production. As a result of this painstaking care, Bethlehem bearing steels can meet the stringent requirements of the anti-friction bearing industry.

But just as important as our ability to turn out sound steel is our ability to rate or evaluate every heat according to the customers' standards. These standards often vary according to the sizes and bearing components to be manufactured.

Preliminary tests for inclusion ratings are taken by our mill technicians as soon as the billets are rolled. The extent and coverage of this examination is governed by the end use of the finished bearing.

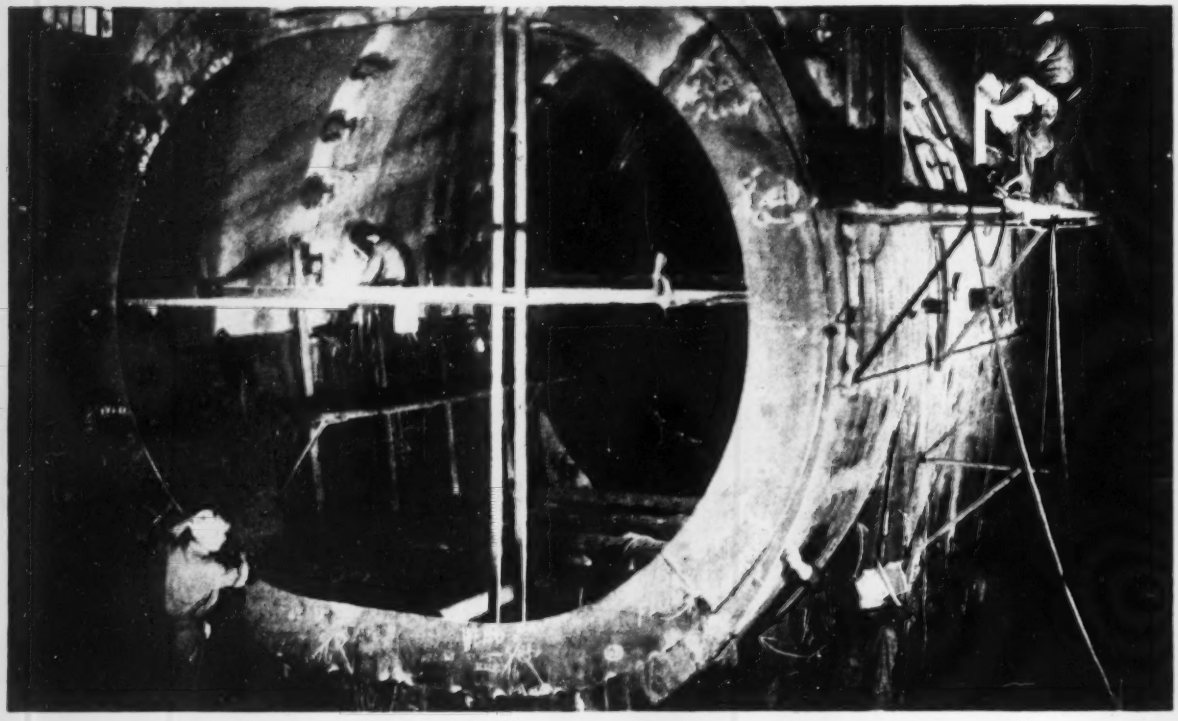
Obviously, any final inspection rating which will be comparative can be realized only where there is a complete understanding between our metallurgists and the customer. Whether you use the 52100 types or low-carbon alloy carburized grades, we will be glad to give you further information on methods of rating, as well as analyses and properties.

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

BETHLEHEM ALLOY STEELS

BETHLEHEM STEEL



This formula helps an entire industry!

More and more firms in the chemical industry are coming to rely on this formula:

Barium Steel Corporation—best source for structural and steel plate, fabricated forms and finished products of steel, aluminum, magnesium, Fiberglas, plastics.

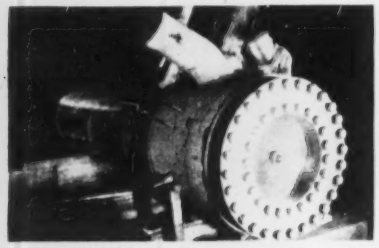
The reason for this conviction is that the group of strategically located companies comprising Barium Steel Corporation serves the chemical industry as a *unified* source for its structural and equipment requirements, controlling quality from blast furnace to end product, working as a self-contained supplier of urgently needed material.

For example, in the scene above, workers at Barium's Central Iron and Steel Company are building a giant condenser shell from Central plate, which is also fabricated into tanks, heat exchangers and piping for the process industries. Other Barium subsidiaries (see photos below) supply the chemical field with a number of important components.

Whatever your industry, Barium can provide you with the same kind of service. For details, write Barium Steel Corporation, 25 Broad Street, New York City. No obligation.

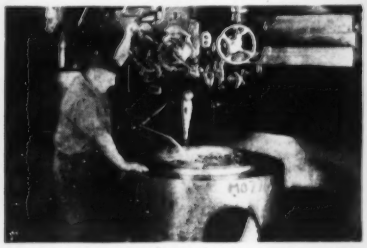
BAYONNE BOLT CORP. • CENTRAL IRON AND STEEL COMPANY • CHESTER BLAST FURNACE • CLYDE IRON WORKS, INC. • CUYAHOGA SPRING COMPANY • EAST COAST AERONAUTICS, INC. • ERIE BOLT AND NUT COMPANY • GEOMETRIC STAMPING CO. • GLOBE FORGE INCORPORATED • INDUSTRIAL FORGE & STEEL, INC. • JACOBS AIRCRAFT ENGINE CO. • KERMATH MANUFACTURING CO. • KERMATH LIMITED (CANADA) • PHOENIX BRIDGE CO. • PHOENIX IRON & STEEL CO. WILEY MANUFACTURING CO.

3.5



THE HEAD of this Lummus Co. heat exchanger unit is securely fastened by bolts and studs specially made by Barium's Erie Bolt and Nut Co. Specialty studs for the industry are also produced by Barium's Bayonne Bolt Corp.

THIS INGOT in the blooming mill at Phoenix Iron and Steel Co. will ultimately become structural steel, which is widely used in the chemical industry for the construction of new processing equipment.



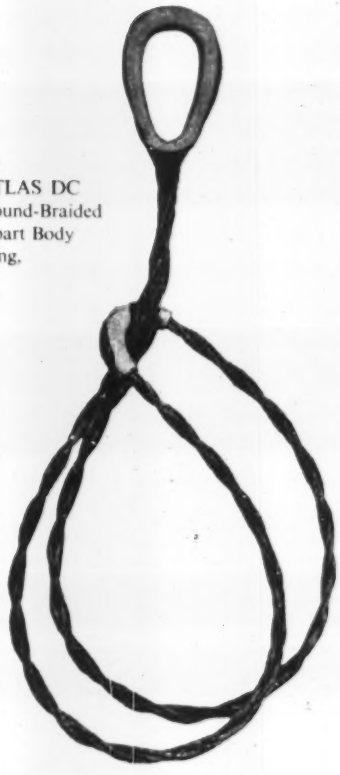
HEAT EXCHANGER manufacturers like Griscom-Russell Company take heavy forgings of Barium's Industrial Forge & Steel, Inc., and fabricate them into parts that resist temperature, high pressure, and the corrosive action of chemicals.

Sling life goes up with "balanced braiding"

Macwhyte's Atlas Braided Slings

There's longer life in an Atlas Braided Sling because of Macwhyte's *balanced* method of construction: 1. Ropes are spliced endless before braiding. 2. Right lay ropes balance left lay ropes. 3. All ropes follow uniform spiral paths, assuring balanced tension throughout the sling body.

Greater flexibility, no kinking, no spinning, and longer sling life are all provided by Macwhyte's "Balanced Braid."



ATLAS DC
Round-Braided
8-part Body
Sling.

Complete line of slings to fit every need

Three types of body are available: Atlas Round-Braided, Drew Flat-Braided, Monarch Single-Part. All are made to order in any size for any job.

Our engineers will gladly study your sling needs and make recommendations.

Two Macwhyte Atlas type 1 CT Round Braided Slings with 6-ton lifting beam handling plate stock.

MACWHYTE SLINGS

MACWHYTE COMPANY
KENOSHA, WIS.

See the hundreds of slings in new Macwhyte Sling Catalog S-8

MACWHYTE COMPANY
Kenosha, Wisconsin

Manufacturers of Internally Lubricated PREformed Wire Rope, Braided Wire Rope Slings, Aircraft Cable, Safe Lock Assemblies, Monel Metal and Stainless Steel Wire Rope.

Mill depots: New York • Pittsburgh • Chicago • St. Paul Fort Worth • Portland • Seattle • San Francisco • Los Angeles • Distributors throughout U.S.A.

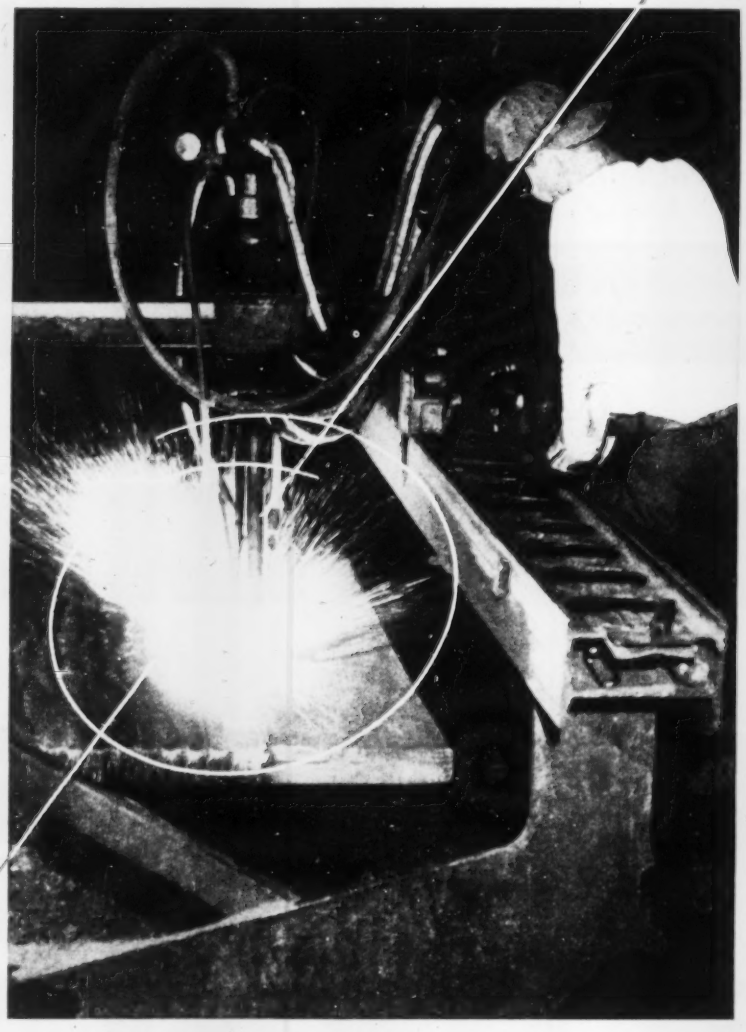
How Oxygen...and LINDE SERVICE*

SAVED $700,000 FOR ONE STEEL COMPANY

"Burning the unburnable" was the problem that faced producers of stainless steel. This steel resisted scarfing and cutting—even with the intense heat of the oxy-acetylene flame.

Doing this work by mechanical methods meant sky-high costs. But that looked like the only answer—until LINDE SERVICE took a hand with the problem.

Working in the laboratory and in the field, LINDE engineers developed powder cutting and scarfing. By adding powdered metal to the oxygen flame, stainless steel was scarfed and cut with ease and speed.



LINDE SERVICE IN ACTION! Powder cutting is saving this company alone over $700,000 per year in the production of stainless steel. And they're making a better product.

This is but one example of how LINDE customers are saving millions of dollars each year through LINDE SERVICE. If you use oxygen, let us tell you how LINDE SERVICE can save you time and money, too.

* **LINDE SERVICE** is the unique combination of research, engineering, and over 40 years of accumulated know-how that is helping LINDE customers save money and improve production in their uses of oxygen and oxy-acetylene processes.

Linde Trade-Mark

LINDE AIR PRODUCTS COMPANY

A Division of UNION CARBIDE AND CARBON CORPORATION

30 East 42nd Street New York 17, N. Y.

In Canada: Dominion Oxygen Company, Limited, Toronto

This Week in Metalworking

STEEL

Vol. 132 No. 16 Apr. 20, 1953

✓NEWS ✓PRODUCTION-ENGINEERING ✓MARKETS

✓ **Metalworking Outlook** 59
Past, present and pending events of significance to your industry and to your company

As the Editor Views the News 63

Special Report following page 74
STEEL's annual financial analysis of the steel industry in 1952

Windows of Washington 76

Mirrors of Motordom 81

The Business Trend 85
Facts and figures on metalworking include the Industrial Production Index and Barometers of Business

Men of Industry 89

✓ **Production-Engineering News at a Glance** 109

Permanent Magnets Attract More Industry Attention 110
Most of the tough size and shape problems are gone. Big bottleneck now is civilian shortage of nickel and cobalt

Steel Gears Produced in Short Lots 114
Quick setup, low investment system prepares large gear blanks in record-breaking time

New Products and Equipment 123

Progress in Steelmaking 140
Last of the Merry-Go-Rounds—New billet mill replaces the repeater table at Keystone

Stainless Steel Galling Characteristics Checked 150
Armco test method fixes galling load points for most of the stainless steels. Here are the graphical data

✓ **The Market Outlook** 179
Metal Prices and Composites beg'n on Page 180

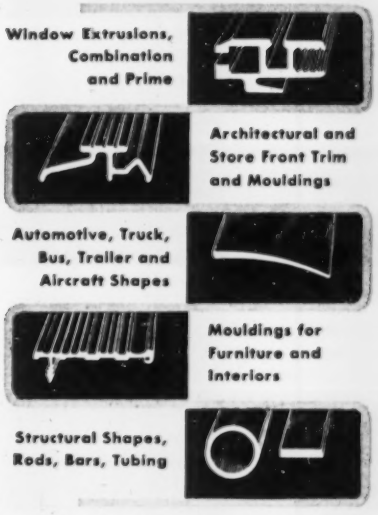
Metal Market 182

Behind the Scenes	6	Foreign News	75
Letters to the Editors	10	Obituaries	92
Subcontract Summary	74	Helpful Literature	125
Checklist on Controls	74	Calendar of Meetings	145

Editorial, Business Staffs 16. Advertising Index 213. Editorial Index available semiannually. STEEL also is indexed by Engineering Index Inc., 29 West 39th St., New York 18.

Published every Monday by the Penton Publishing Company, Penton Building, Cleveland 13, Ohio. Subscription in the United States and possessions, Canada, Mexico, Cuba, Central and South America, one year $7.50, two years $15; all other countries, one year $20. Single copies (current issues) 50 cents. Metalworking Yearbook issue $2.00. Entered as second class matter at the postoffice in Cleveland, under the Act of March 3, 1879. Copyright 1953 by Penton Publishing Co.

PE ALUMINUM EXTRUSIONS
designed and produced to fit your needs


Window Extrusions, Combination and Prime
Architectural and Store Front Trim and Mouldings
Automotive, Truck, Bus, Trailer and Aircraft Shapes
Mouldings for Furniture and Interiors
Structural Shapes, Rods, Bars, Tubing

If your production requirements call for a specially-designed aluminum extrusion, the skill and experience of PE design engineers and production men are available to you to help answer your specific needs. Or, it may be that a solution to your requirements can be found among the 4000 standard rods, bars, shapes, and tubing currently cataloged by Precision Extrusions and available without additional die service charge.

PE **PERSONALIZED SERVICE** and specialization in aluminum extruding assures you of prompt handling of your inquiry, careful production supervision, and extrusion quality meeting the highest standards of the industry.

PE **COMPLETE FACILITIES** include design engineering, die making, billet casting, extrusion production, and standard finishing operations.

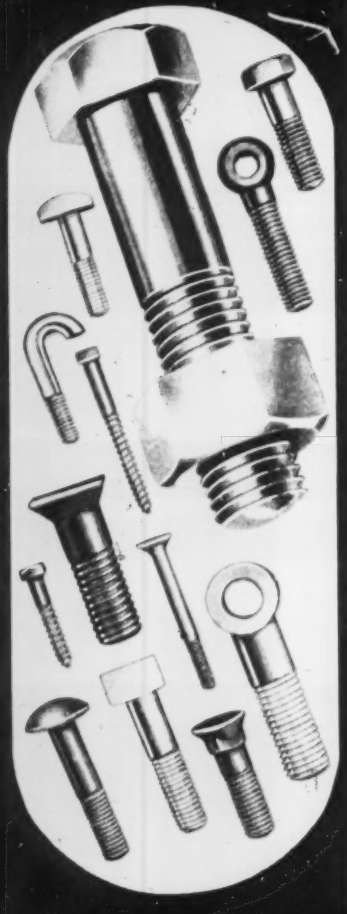
PE **ENGINEERING ASSISTANCE** is available without obligation. If your present or future plans call for quality aluminum extrusions in standard or special shapes, call on PE, or *write, on your company letterhead, for our new complete catalog.*

QUALITY • SERVICE
PE
PRECISION EXTRUSIONS
BENSENVILLE, ILLINOIS
CHICAGO: TUxedo 9-1701 • BENSENVILLE 98

UNIFORM CLASS 3 FIT

BOLTS·NUTS
STUDS

- Carbon Steel
- Silicon Bronze
- Alloy Steels
- Naval Brass
- Stainless Steel
- Monel Metal



You can depend on a uniform Class 3 fit when you buy Pawtucket threaded fasteners. Standard items or specialties — all Pawtucket products are accurately made in standard dimensions or to your specifications. Heat treating with precision-controlled modern equipment.

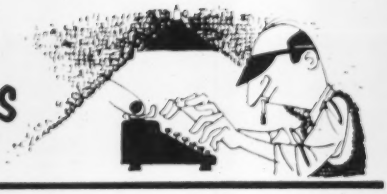
BETTER BOLTS SINCE 1882

PAWTUCKET

"THE BOLT MAN"
MANUFACTURING COMPANY
327 Pine Street Pawtucket, R. I.
THE PLACE TO SOLVE YOUR BOLT PROBLEMS

T.M. REG.

behind the scenes



Meet Floyd Lawrence . . .

Apprentice molder . . . screw machine operator . . . machinist . . . newspaper reporter . . . verse writer . . . STEEL assistant editor . . . these were the stepping stones which led Floyd Lawrence to his present position as STEEL's Detroit Editor and writer of the popular *Mirrors of Motordom* column.

"I like the whole flavor of being around people who are designing and building automobiles", is Floyd's way of saying that he likes his assignment in the nation's Motor City. He's making that assignment pay off in many ways, too. His latest and most unique "exploitation" is his arrangement with Detroit automobile manufacturers that he test drive each of their cars for periods of one-week on a rotating basis so that he can "get the feel" of his subject. They bought the idea. Today, Lawrence rolls around on brand new wheels each week and is the most prosperous-appearing columnist in the Auto City.

Floyd is a sports car enthusiast of front row calibre and, in addition to tearing down the motor of his 1952 MG periodically, he participates in sports car club activities and says that he will probably enter his first road car racing competitions sometime this year.

Sports cars are only one of Lawrence's extra curricular interests. He owns a private pilot's license and takes up an air scooter "just often enough to remember how".

He's a photo fanatic too . . . currently experimenting with color photography. Takes many of the pictures you see in his "Mirrors" column each week. Often uses his color landscape shots as models when he feels in a painting mood . . . oils no less.

Floyd loves to paint landscapes 'cause he knows so much about them. Picked up most of his vast fund of knowledge by shooting a divot-digging 105 on the golf course. Nuff sed!

A Swell (ed) Head

Daniel, the new wonder boy addition to our art department, caught us in an unguarded moment last week as we were writing our bit. The creative aura in which we worked so inspired him that he was moved to put our likeness down on paper.

The result, of course, is the new column heading above. Please forgive us this mad moment but, as you look at Shrdlu in the dramatic pose above, aren't you struck with a profound feeling that here, truly, is genius at work?

Steal Reader

We have known for quite some time that STEEL enjoys a large and varied readership. However, a recent letter from R. J. Bowllan, field engineer for the Allison Company of Bridgeport, Connecticut sets a new standard for the unusual.

"I am writing this letter to obtain information concerning the new "Specifications Handbook" which you distributed free of charge to subscribers. While I am not a subscriber to your magazine, I have not missed an issue for some time. Thanks to the generosity and good taste of the many industrial plants located in the Pittsburgh area which provide your magazine in the reception rooms for the perusal by sales representatives, I am able to thoroughly read each issue. It may take twenty calls to do it but to date I haven't missed an article."

For perseverance rarely matched by ordinary STEEL subscribers . . . we hereby confer upon you the title of "*Steal* Reader of the Year" and send you in confirmation thereof an autographed copy of the *Specs Handbook*.

Shrdlu

(Metalworking Outlook Page 59)

DEEP DRAWING

with *MULTIPRESS*®

at The Buckeye Stamping Co., Columbus, Ohio

from this blank, in only four cost-cutting oil-smooth strokes, to the formed aluminum tumbler

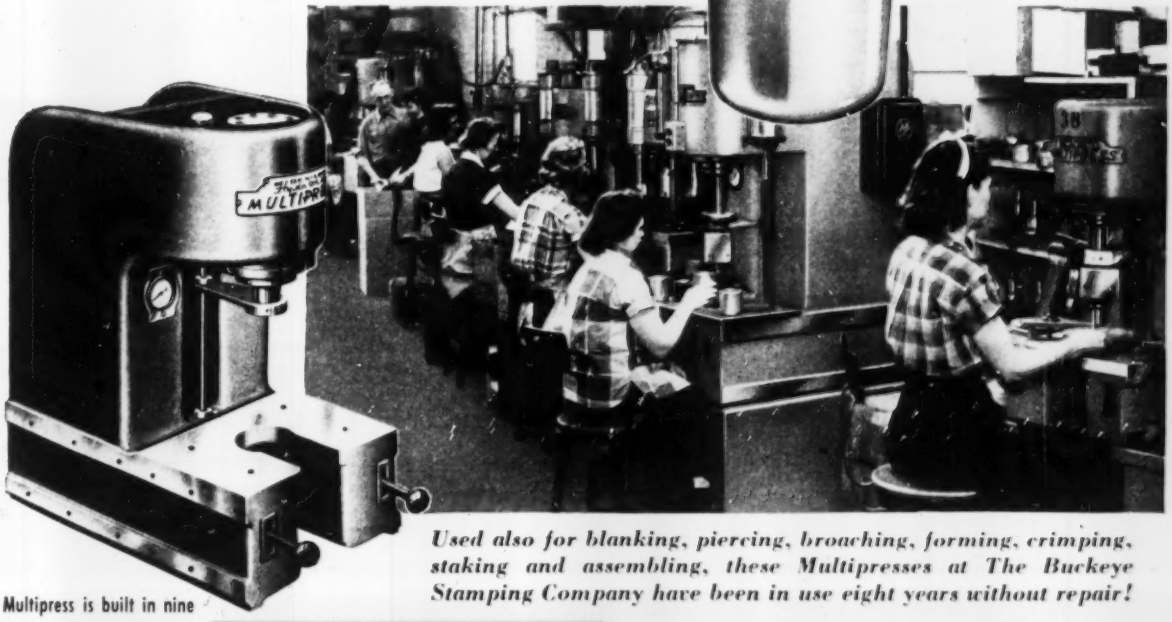
In only four draws Multipress converts .040 gauge aluminum blanks from 7⅛" flat discs to gracefully flared tumblers 4¾" deep.

Two 8-ton and two 4-ton Multipresses produce 5000 tumblers daily in a seven-hour operating period. Other 4-ton Multipresses trim edges of the flared lip and stamp a brand name in the base of the tumblers.

Scrap loss is limited to occasional blanks with pits that show up as flaws in the first draw. These are set aside and finished later, to be sold as "seconds."

Two cylinders mounted on the head of the Multipress serve as blank holders and both blank holder and press ram are actuated by a single foot-pedal control. Fast, unified action speeds the operation with these simple yet cleverly tooled Multipresses.

This cost-cutting job is typical of Multipress performance. The *controlled thrust* of its oil-hydraulic ram action cuts spoilage . . . improves metal flow . . . permits deeper draws . . . reduces wear and tear on dies. Other Multipress advantages include infinitely adjustable *ram speed, pressure,* and *stroke length* . . . easy attachment of tooling, parts hoppers, index table feeds, and many other accessories for any type of operation.



Used also for blanking, piercing, broaching, forming, crimping, staking and assembling, these Multipresses at The Buckeye Stamping Company have been in use eight years without repair!

Multipress is built in nine frame sizes — bench and floor models — 1-ton to 75-ton capacities. Write for complete details.

DENISON Hydr OIL ics

The DENISON Engineering Co.
1163 Dublin Rd., Columbus 16, Ohio

New Metal Finishes

FOR COILED OR SHEET STRIP !

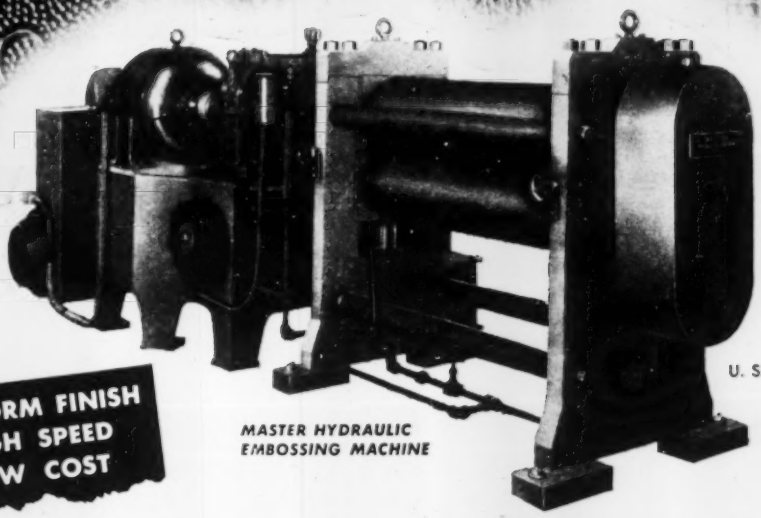
Reproduce Metal Finishes of the "OLD MASTERS" or any "Modern" all-over or localized decorative patterns with this NEW ROTARY HIGH SPEED METHOD!

"The GREATEST Development in the History of Embossing"

• Produces a wide variety of prefabricated finishes • Localized embossing and cold rolling in one operation* • Mckes light gauge metals rigid and stronger • Many installations now in operation

*U.S. Patent Pending.

Meet the METAL World of Tomorrow Ahead of Competition—



U. S. Patent Pending

UNIFORM FINISH
HIGH SPEED
LOW COST

MASTER HYDRAULIC EMBOSSING MACHINE

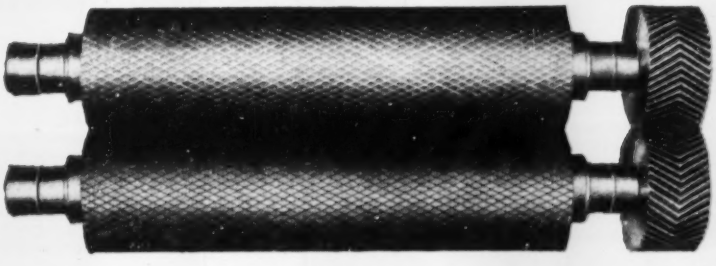
MASTER

Hydraulic

EMBOSSING MACHINE

and

ENGRAVED MATCHED HARDENED FORGED STEEL EMBOSSING ROLLS



ENGRAVED MATCHED HARDENED FORGED STEEL ROLLS

U. S. Patent Pending

© 1953 Modern Engraving & Machine Co.

MODERN ENGRAVING & MACHINE CO.

1413 CHESTNUT AVE., HILLSIDE 5, NEW JERSEY

Give fire half a chance and it will over-run you like a swarm of ants.
You must stamp it out anywhere it shows itself.
In the paint locker, power plant, garage.
That calls for a battery of strategically placed KIDDE Portable Fire Extinguishers.

The word "Kidde" and the Kidde seal are trade marks of Walter Kidde & Company, Inc. and its associated companies.

Get the ants out of your plants.
Call your KIDDE dealer today.

Kidde

Walter Kidde & Company, Inc.

460 Main Street, Belleville 9, N. J.

Walter Kidde & Company of Canada, Ltd., Montreal, P. Q.

LETTERS TO THE EDITORS

Recount of Extrusion Plants

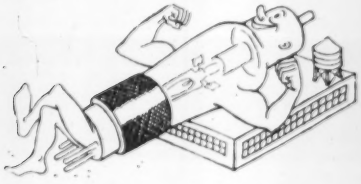
As manufacturers of aluminum extrusion machines, we were interested in your article "More Aluminum" (Mar. 23, p. 58).

We have been doing some research and thought you would be interested in hearing that our record shows about 100 aluminum extrusion plants in the U. S. This figure differs considerably with your estimated figure of 49 plants.

J. Warren Behrens
Market Research Department
Watson-Stillman Co.
Roselle, N. J.

• STEEL's *count included only major plants. Watson-Stillman's records are more complete.—ED.*

Electronics: A Giant Grows



If possible, I would like to secure 25 reprints of your article "Industrial Electronics: A Young Giant with Growing Pains" (Mar. 16, p. 96). This article was very interesting to me and I plan to pass it out among my staff group.

G. E. Klock
plant manager
Receiving Tube Division
Sylvania Electric Products Inc.
Emporium, Pa.

• *Sent.—ED.*

Upon my return from the West Coast yesterday I had an opportunity to read your article "Industrial Electronics: A Young Giant with Growing Pains" (Mar. 16, p. 96) which we think is very, very good. Would it be possible to get reprints of this article? They would be distributed to securities dealers all over the country.

Paul A. Just
executive vice president
Television Shares Management Co.
Chicago

• *Reprints may be ordered from our Reprint Department.—ED.*

Management Takes To Series

We thought so much of your feature on public and community relations that we bought a number of reprints for distribution through the corporation.

It certainly helps to have a publication such as yours take an interest in this important subject.

C. M. White
president
Republic Steel Corp.
Cleveland

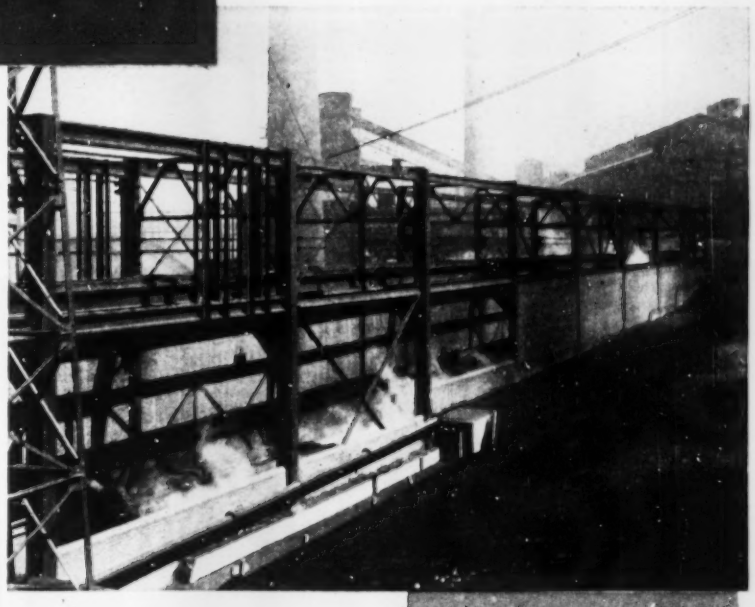
Thank you for the first in your Program for Management Series "How Industry Can Be a Better Neighbor."

As you know, the Ford Motor Co. has for many years carried on an intensive public and community relations program.

Please turn to page 12

INSUL-MASTIC
The Superior Coating

. . . protects metal equipment where coke quenching fills the air with acid vapors.



This spot is considered one of the most corrosive areas in a steel mill. That's why this crane runway is coated with INSUL-MASTIC 4010. The pit under this runway receives all the steaming, acid laden water from freshly quenched coke in a mill where the water must be used over and over. All year long gnawing vapors rise from the pit and cover the steel runway. No damage results, but look at what the vapors have done to the painted steel at the far left.

INSUL-MASTIC is the *Superior* coating that protects for a great many years. Its Gilsonite content makes it practically inert to acids. Its mica content makes it almost immune to weather. It's homogenized so that nothing settles in the drum . . . it is sprayed as it is blended. It is applied 1/16" to 1/8" thick in one coat.

All this adds up to a *Superior* coating . . . and this crane runway is only one of the many corrosive areas in steel mills where INSUL-MASTIC guards against the attacks of corrosion.

Write for the name of your nearest INSUL-MASTIC Representative for expert advice on protecting your equipment where coke quenching and other sources of corrosion take place.

Think first of the coatings that last!

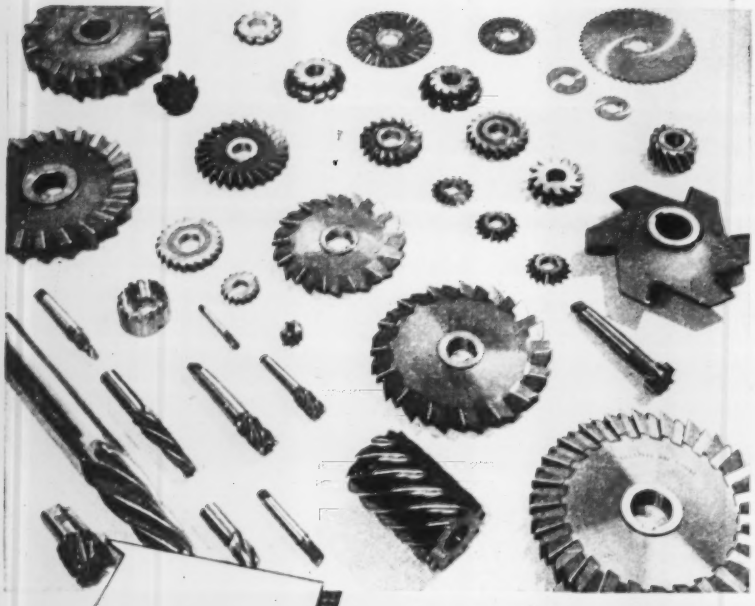
CORROSION PROOFING
WATERPROOFING
VAPOR SEALING
INSULATION

Type "D"—The cork impregnated coating that insulates as it prevents corrosion.

4010 and granules—An attractive, weather resistant resurfacing for old or leaky masonry walls.

Insul-Mastic

CORPORATION OF AMERICA
Oliver Building • Pittsburgh 22, Pa.
Representatives in Principal Cities



THE *Complete Line*

GORHAM

END MILLS AND MILLING CUTTERS

For profitable solutions to production milling problems, call on Gorham! Over thirty years' experience in creating fine cutting tools is your assurance of satisfaction.

An extensive line of *standard* end mills and milling cutters is stocked by Gorham distributors. When you need *special* tooling, a Gorham Field Engineer surveys your problem and makes design recommendations for a tool to be "tailor-made" for your application by skilled Gorham craftsmen.

Ask your distributor for Gorham "standards." For "specials," call in your nearby Gorham Field Engineer. They're both well qualified to help you . . . and backed by unmatched experience and facilities. For profitable solutions to milling problems, call on Gorham! There's no obligation.

Write for free 120 page catalog. Shows entire line, contains valuable engineering information.

Gorham TOOL COMPANY

"EVERYTHING IN STANDARD AND SPECIAL CUTTING TOOLS"

14401 WOODROW WILSON • DETROIT 3, MICHIGAN

WEST COAST WAREHOUSE: 576 North Prairie Ave., Hawthorne, Calif.

LETTERS

Concluded from page 10

It is this program which has earned for our company the respect and high regard it presently enjoys, both in the community and throughout the nation.

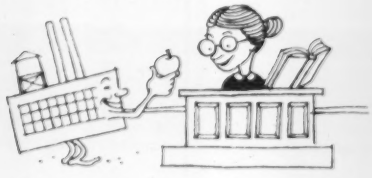
The other reports in your series also appear to contain information which should make interesting reading for anyone engaged in metalworking. I will be looking forward to reading them as they are published.

J. K. Sutherland
general manager
Steel Division
Ford Motor Co.
Dearborn, Mich.

You have turned in a magnificent job on your industry-government relations insert "Mr. 'B' Looks to Washington" (Mar. 30, p. 53) (Second in the management series). It surely is the kind of change-of-pace article which indicates your leadership in your field.

John H. Caldwell
Sales Management
New York

Passing the School Marm



In your Mar. 23 issue, I noticed a short article titled "Schoolmarm for Industry" (p. 48). In it was discussed a film recently announced by Westinghouse Electric Corp. called "Let's Face It." The sound of this was very intriguing to me, and I am wondering where I should write in order to obtain a booking for it.

F. Steele Blackall III
assistant general manager
Taft-Peirce Mfg. Co.
Woonsocket, R. I.

• *Your request has been forwarded to T. O. Armstrong, director of personnel services, Westinghouse Electric Corp., Pittsburgh, who will contact you directly on when a copy of the film will be available.—ED.*

Needle Bearings Explained

I think you did a creditable job in your article "Industry Gets the Needle" (Mar. 30, p. 52) that should interest not only laymen who read STEEL but some of the technical men, many of whom are not too familiar with the needle bearing and the use of needles as it has developed during the past 20 years.

C. S. Ripley
Roller Bearing Co. of America
Cleveland

Old Article, New Interest

In your article "Research Pushed on Gas Turbine Blade Materials" (Aug. 27, 1951, p. 72) there is a list of nickel alloys.

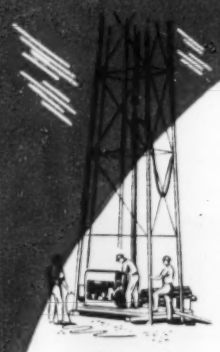
One alloy, the last on the list, is designated as "61". We are extremely anxious to know the name of the producer.

Bert Wolff
Groma Trading Corp.
New York

• *The alloy listed as "61" is a Haynes-Stellite product and their designation is HS23.—ED.*

How Layne assures your water supply

UNDIVIDED LAYNE RESPONSIBILITY MEANS COMPLETE SERVICE, LOWER COSTS



Layne surveys and test wells

Layne's *complete* service begins long before the wells are drilled . . . with geological surveys made in cooperation with engineers of the client company or municipality. Test-hole drilling shows actual conditions.

Layne analyses and recommendations

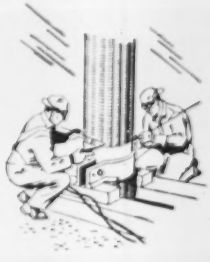
Samples taken from the test holes go to Layne's central laboratories, where technicians report on the earth structure and qualities of the water. From these reports, water-system recommendations are made.

Layne-engineered pumps, screens, casings

Into every Layne well goes equipment designed for the specific job—the finest equipment, produced with the greatest economy, because of Layne's thorough engineering skill and world-wide experience.

Layne installation and maintenance service

Skilled Layne workmen handle every stage of the job—assuring a system custom-engineered for your own situation. And Layne's experience is always at your service for any maintenance work you may need.



Let Layne help you plan ahead on your water needs

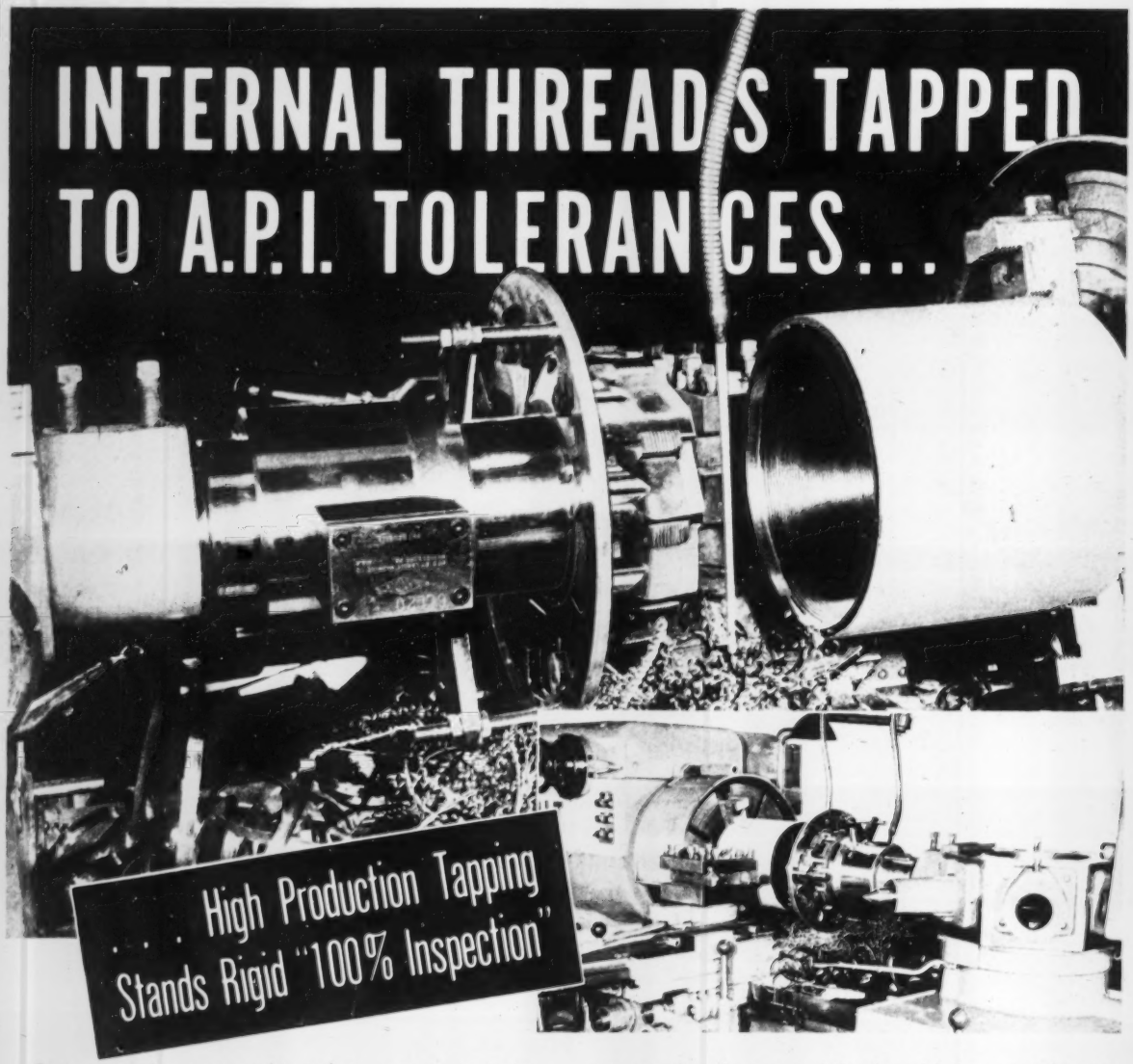
Layne welcomes the opportunity to share in long-range planning for your water-supply needs. For information on any phase of well water supply or pump equipment, contact your nearest Layne Associate Company or write Layne & Bowler, Inc., General Offices, Memphis 8, Tenn.

Layne

WATER WELLS • VERTICAL TURBINE PUMPS
WATER TREATMENT

Layne Associate Companies Throughout the World

INTERNAL THREADS TAPPED TO A.P.I. TOLERANCES...



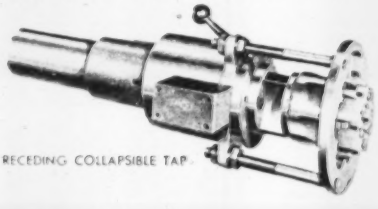
Casing couplings are subjected to enormous strains created by the weight of the suspended casing, as well as to tremendous internal and external pressures. For these reasons they require threads of extreme accuracy. Thus the prime consideration in the selection of equipment for the production of these threads is that it produce A.P.I. threads at economical production rates.

The operation shown here is one of many where internal tapered threads are cut to A.P.I. tolerances at high production rates by Landis LL Receding Collapsible Taps. 8 pitch round form threads are cut in Grade N80 casing couplings $10\frac{3}{4}$" in diameter to a length of 4" with a $\frac{3}{4}$" taper. Production is high—averaging consistently about 17 surface feet per minute. A.P.I. tolerances are met without difficulty.

Landis LL Receding Collapsible Taps are designed and built for this type of work. The receding mechanism causes the chasers to recede into the tap head automatically at a rate equal to the taper of the thread being cut. When the thread is completed the chasers collapse into the tap head, and the tap is withdrawn.

Each tap has a wide range of cutting diameters since the tap heads are detachable and interchangeable. For example, if furnished with appropriate heads, the 6LL Tap Body, shown here equipped with a 10" ALM Tap Head will cut threads in all pipe sizes ranging from 6" to 12" inclusive. The Style LL Tap Body is made in four sizes to cover a range of nominal pipe sizes from 1" to 12" inclusive.

Write for Bulletin G-95



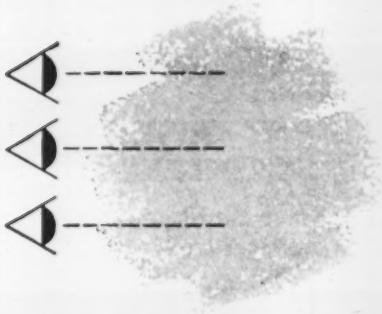
LANDIS STYLE LL RECEDING COLLAPSIBLE TAP

THE LANDIS *Machine* CO. 50TH ANNIVERSARY '00 **WAYNESBORO PENNSYLVANIA**

BE SURE TO VISIT OUR EXHIBIT AT THE TULSA OIL SHOW—BOOTH 17 & 18, CALIFORNIA BUILDING

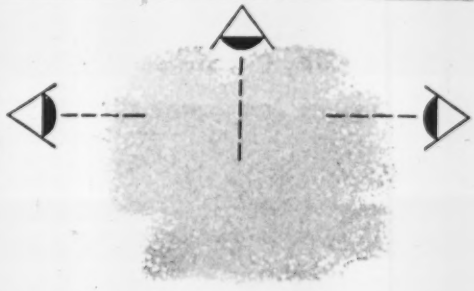
3-way analysis...

EXAMINATION
DIAGNOSIS
PRESCRIPTION



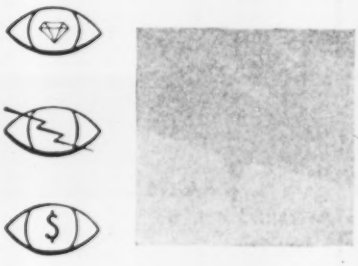
from 3 angles..

EFFICIENCY
SUITABILITY
COST



to gain 3 benefits.....

QUALITY
OUTPUT
ECONOMY



when you use Republic 3-Dimension Metallurgical Service

Fuzzy production problems shape up nice and square when the Republic Field Metallurgist and the Republic Mill Metallurgist and the Republic Laboratory Metallurgist all put to work their combined knowledge of alloy steels and heat-treatment and machining. Scores of Republic customers are making better products at greater rates and lower cost because they called in a Republic Field Metallurgist. It may be an idea *you* could use to your benefit!

REPUBLIC STEEL CORPORATION
Alloy Steel Division • Massillon, Ohio
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department:
Chrysler Building, New York 17, N. Y.

Republic
REPUBLIC STEEL
ALLOY STEELS

NOW you can

BRIGHT-ANNEAL STAINLESS

on a continuous production basis, with

The

SARGEANT & WILBUR

Controlled Atmosphere

CONVEYOR FURNACE

PARTS MADE OF STAINLESS can be

BRIGHT-ANNEALED,

BRIGHT-HARDENED, or

BRIGHT-BRAZED without oxidation . . . they come out scale-free, bright, and clean. No pickling required, no tumbling, no sand blasting.

With our special S. & W. alloy for bright-brazing stainless, the color matches the metal, resists dulling; and the joint is practically invisible. *Gold and silver parts are soldered in the same continuous-production furnace with equal success.*

Your samples processed free. If you want to see some of your own work bright-annealed, bright-hardened, or bright-brazed in a conveyor furnace, send us samples and specifications.

SARGEANT & WILBUR, INC.
180 Weeden St.
PAWTUCKET, R. I.

Send your illustrated folder "How to BRIGHT-ANNEAL STAINLESS in the S. & W. Conveyor Furnace."

Name .....

Company .....

Address .....

Representatives:
NEW YORK CITY and PENNSYLVANIA Gerald B Duff, 68 Clinton Ave., Newark, N. J.; MICHIGAN and NORTHERN OHIO M. C. Schwer, 2970 W. Grand Blvd., Detroit 2, Mich.; NEW ENGLAND James J. Herkis, 180 Weeden St., Pawtucket, R. I.

STEEL

The Weekly Magazine of Metalworking

Editor-in-Chief, EARL L. SHANER — *Editor*, IRWIN H. SUCH

Managing Editor, WALTER J. CAMPBELL

Assistant Managing Editors, VANCE BELL, JOHN S. MORGAN

News and Markets

WM. M. ROONEY	*Market Editor*
FRANK R. BRIGGS	*Associate Editor*
ARTHUR W. ZIMMERMAN	*Assistant Editor*
JOHN KELSEY	*Assistant Editor*
ROBERT O. JAYNES	*Assistant Editor*
ROBERT M. LOVE	*Assistant Editor*
H. VANYORX CALDWELL JR.	*Assistant Editor*
DAVID S. PARRETT	*Assistant Editor*
MARY T. BORGERHOFF	*Assistant Editor*

Engineering and Production

EDWIN L. KARPICK	*Engineering Editor*
ALLEN G. GRAY	*Technical Editor*
J. D. KNOX	*Steel Plant Editor*
ROBERT F. HUBER	*Machine Tool Editor*
WM. R. WOLFE	*Assistant Editor*
THOMAS F. HRUBY	*Assistant Editor*
DOLORES K. MAILLE	*Assistant Editor*
NANCY SHAEFFER	*Editorial Asst.*
ELIZABETH RIPLEY	*Editorial Asst.*

Resident Editors

New York 17 — 60 East 42nd St.
B. K. PRICE, L. E. BROWNE, SAMUEL W. BAKER
Murray Hill 2-2581

Chicago 11 — 520 North Michigan Ave.
E. F. ROSS
Whitehall 4-1234

Pittsburgh 19 — 2837 Koppers Bldg.
ROBERT E. HALL
Atlantic 1-3211

Detroit 2 — 6560 Cass Ave.
FLOYD G. LAWRENCE
Trinity 5-3024

Washington 4 — 1123 National Press Bldg.
[illegible]
Executive 3-6849

London, 2 Caxton St., Westminster S.W. 1
VINCENT DELPORT
European Editor

Editorial Correspondents

Birmingham	R. W. KINCEY, Birmingham 3-1121	Seattle	R. C. HILL, Melrose 1895
Buffalo	L. G. FELDMANN, Cleveland 5353	Dallas	C. K. CATES, Riverside 4355
St. Louis	MAC L. HUTCHENS, Republic 7752	Toronto	F. S. TOBIN, Empire 4-9655
Youngstown	GEORGE R. REISS, 7-1471	Birmingham, Eng.	J. A. HORTON
Los Angeles	NORMAN LYNN, Hudson 2-4373	Paris, France	LEON JAUDOIN-PROM
San Francisco	EDWIN HAVERTY, Yukon 6-5151	Liege, Belgium	M. JACQUES FOULON
		Dusseldorf, Germany	DR. HERBERT GROSS

BUSINESS STAFF

Business Manager	J. W. ZURER	*Advertising Manager*	C. H. BAILEY
Promotion Manager	S. F. MARINO	*Production Manager*	A. V. ANDERSON
Circulation Manager	G. R. EBERSOLE	*Classified Advertising Mgr.*	DORIS ROBBINS
Research Manager	N. R. LADABOUCHE	*Mail & List Service*	AMY LOMBARDO
Market Statistics	G. J. AUNER	*Reprints*	C. B. NILES

Advertising Representatives

New York 17 — 60 East 42nd St.
E. W. KRETZBERG, K. A. ZOLLNER
Murray Hill 2-2581

Farmington, Conn. — 12 Farmstead Lane
CALVIN FISHER, JR.
Farmington 7-1756

Pittsburgh 19 — 2837 Koppers Bldg.
S. H. JASPER, J. C. SULLIVAN
Atlantic 1-3211

Cleveland 13 — Penton Building
D. C. KIEFER, H. G. ROWLAND
Main 1-8260

Cincinnati 30 — 5568 Beechmont Ave.
E. L. FRANKE—Parkway 3610

Detroit 27 — 14583 Longacre Rd.
C. A. TALLINGER JR.—Vermont 8-7207

Chicago 11 — 520 North Michigan Ave.
L. C. PELOTT, W. L. POLAND
JOHN W. VAUGHAN
Whitehall 4-1234

Los Angeles 48 — 6262 Commodore Sloat Dr.
F. J. FULLER—Webster 1-6865

Griffin, Georgia — 331 South 12th St.
FRED J. ALLEN—Griffin 7854

Circulation Representatives

H. R. DUNNE, C. A. PRICE

CCA

NBP

MPA

Published Every Monday by

THE PENTON PUBLISHING CO., Penton Bldg., Cleveland 13, Ohio

President and Treasurer ..... G. O. HAYS
Chairman ..... E. L. SHANER
Vice Pres., Director of Advertising ..... R. C. JAENKE
Vice Pres. and Secretary ..... F. G. STEINEBACH
Asst. Secy. and Asst. Treas. ..... J. P. LIPKA

Also Publisher of FOUNDRY, MACHINE DESIGN, NEW EQUIPMENT DIGEST

Member of Controlled Circulation Audit, Inc., Magazine Publishers Association Inc., Society of Business Magazine Editors, and National Business Publications, Inc.

Norton presents...

the NEW

BOND

for your latest value-adding

"TOUCH OF GOLD"

He Knows! Operators who have used the new Norton G Bond wheels will tell you there's nothing like them for getting better grinding results faster and easier. Why not get your own operators' verdict on this newest "Touch of Gold"?

ANNOUNCING

the greatest grinding wheel achievement in 45 years

The NEW Norton

G BOND

The new Norton vitrified G Bond, now ready after years of continuous development, is designed for a wide range of precision and semi-precision grinding.

The physical properties of the G Bond are so ideally suited to these types of operations that wheels bonded with it show a marked improvement — from every performance angle — over any wheels you have ever used before. In fact, the new G Bond offers so many benefits to so many grinding wheel users that it stands out as an important milestone.

The New G Bond's Secret For More Efficient Cutting Action

The G Bond holds ALUNDUM* abrasive grains firmly while they fracture, so that they keep sharp and remain in the wheel until they have done their full quota of work. Thus the wheel's grinding surface is kept at constant peak efficiency. An added advantage is that G Bond wheels may be dressed or trued more easily, and without disturbing the underlying bond.

How G Bond Wheels Outperform All Others

Performance is the payoff. And once you try G Bond wheels you'll know that here you've found production tools that will do *more* for you, do it *better,* and do it for *less.* Exceptional performers in every detail of operation, G Bond wheels: Do more work per wheel . . . Cut freer, cooler, faster . . . Dress easier . . . More pieces per dressing . . . Cover a wider range of jobs . . . Hold their shape — better for form grinding . . . Hold corners better . . . Are ideal for crush dressing.

Typical jobs where G Bond wheels will save you time, labor and money

CYLINDRICAL • CENTERLESS
SURFACE • INTERNAL
GEAR • FORM AND THREAD GRINDING
TOOL AND CUTTER • SAW GUMMING

3 ways you can spot the new G BOND'S "TOUCH OF GOLD"

Every time you put a Norton abrasive or abrasive product to work, you add the "Touch of Gold" that increases the value of your own products. You get proof of this in better grinding results and in the way Norton products act on the job. With the new G Bond wheels this proof is particularly easy to recognize. The illustrations show you three striking ways you can jobprove the G Bond's vital "Touch of Gold" . . . the value-adding production step that helps your profits.

By Watching. Note the new G Bond wheels' continuous, even spark stream that could only come from a uniform cutting action — the "Touch of Gold" at its best.

By Listening. Note how G Bond wheels grind with the steady swish-h-h of an extra-smooth performer applying the "Touch of Gold". No harsh grinding noise.

By Checking. Note how every grinding job you do with G Bond wheels — general purpose, high production, or precision — measures up . . . has the "Touch of Gold".

Your Norton Distributor

will be glad to arrange a test of all types of the new G Bond wheels — in regular, 19, 57, 32 or 38 ALUNDUM abrasive — in your own plant. Or you can write to NORTON COMPANY, Worcester 6, Mass. Distributors in all principal cities. *Export:* Norton Behr-Manning Overseas Incorporated, Worcester 6, Mass.

NORTON
ABRASIVES

Making better products to make other products better

*TRADE MARK REG. U.S. PAT. OFF. AND FOREIGN COUNTRIES

Your Norton Distributor is your Headquarters for the "TOUCH OF GOLD"

Your Norton Distributor is a good deal more than just a supplier of top quality production tools. His services are many and varied — and every one of them is planned to lighten your own work and save you money. For example:

- In ordinary grinding problems, such as correct wheel selection or maintenance, he can give you the sound advice that comes from long, practical experience plus training in the Norton School of Grinding.
- If your problems are unusual, he will gladly call in a Norton Abrasive Engineer for expert technical consultation.
- He is careful to keep his stocks adequate for the needs of your area. Aiding him in this are five big Norton warehouses in key cities, in addition to huge stocks at Worcester.
- In emergencies you can count on him for quickest possible deliveries, to avoid costly production delays.
- He is your direct connecting link with the entire Norton organization, world's largest manufacturers of abrasives and the leaders in abrasive research and development.

Your Norton Distributor is *the* man to contact for the world famous abrasive products and service — that will add the cost-cutting, value-adding "Touch of Gold" to all your grinding jobs.

See your Norton Distributor about the new **G BOND** *wheels — soon!*

NORTON COMPANY

WORCESTER 6, MASS.

New York, Chicago, Detroit, Cleveland, Philadelphia, Pittsburgh, Hartford

Distributors in all principal cities — See your classified telephone directory.
Export: Norton Behr-Manning Overseas Inc., Worcester 6, Mass.

NORTON
ABRASIVES

Making better products to make other products better

PRINTED IN U. S. A.

W-1400

MILLER ELECTRIC

CUT MACHINING TIME FROM 2 HOURS to 1 HOUR and ELIMINATED WARPAGE

WITH GROUND AND POLISHED

STRESSPROOF®

SEVERELY COLD-WORKED, FURNACE-TREATED STEEL BARS

This 2¼" generator shaft, 19¼" long, must be drilled through its entire length, have both ends stepped down, and keyseated for 10¾". Ground accuracies are required for pressing on the armature. Drilling was a headache and the keyseating often resulted in severe warpage. It required two hours to finish one shaft.

Three different steels were tried before switching over to STRESSPROOF. When Ground and Polished STRESSPROOF was used, machining time was cut in half—one hour instead of two hours. Warpage was eliminated and the shaft itself was much stronger.

STRESSPROOF makes a better part at a lower cost.

STRESSPROOF has improved quality and lowered costs in hundreds of similar applications because of its unique combination of four qualities in-the-bar: (1) High Strength, double that of ordinary cold-finished shafting; (2) Machinability, fully 50% better than heat-treated alloys of the same strength; (3) Wearability, without case hardening; and (4) Minimum Warpage. STRESSPROOF is available in cold-drawn or ground and polished finish.

Arc Welder, made by Miller Electric Manufacturing Co., Appleton, Wis., uses STRESSPROOF in the generator shaft.

SEND FOR . . .
Free Engineering Bulletin
"New Economies in the Use of Steel Bars"

La Salle STEEL CO.

. . . the Most Complete Line of Carbon and Alloy Cold-Finished and Ground and Polished Bars in America.

La Salle Steel Co.
1414 150th Street
Hammond, Indiana

Please send me your STRESSPROOF Bulletin.

Name_____

Title_____

Company_____

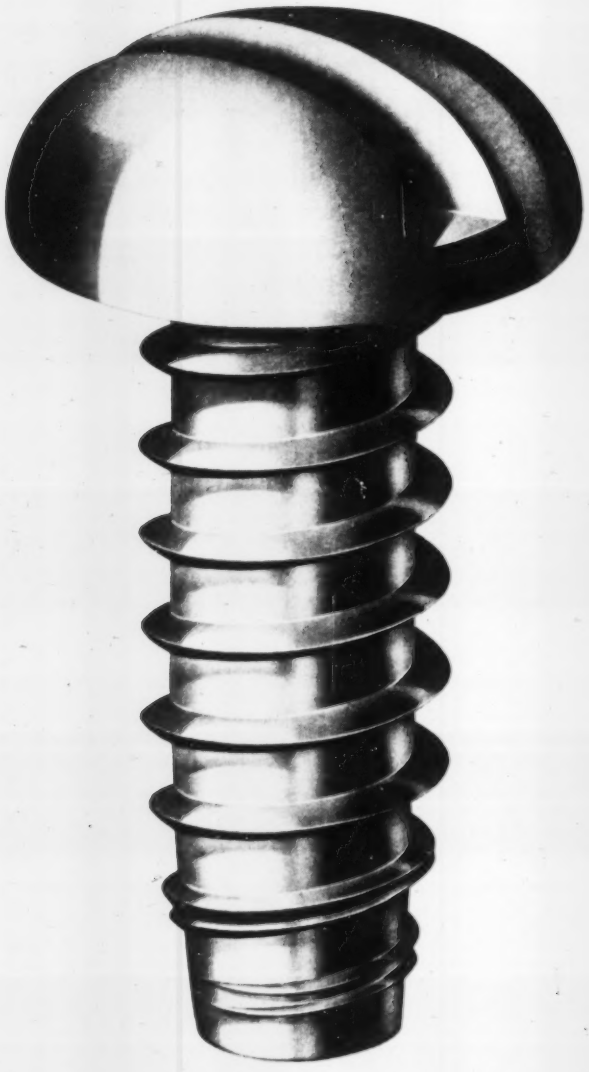
Address_____

City_____ Zone____ State_____

small in size but

BIG

in opportunity for SAVINGS



Just figure your assembly expense as compared to total production cost, and you'll see why. In some products it runs as high as 75%.

Cutting assembly costs is Parker-Kalon's specialty. You get a two-way savings. First, the Self-tapping Screw method, originated by P-K, permits you to save by eliminating needless operations. Second, with certified Self-tapping Screws of P-K guaranteed quality, you can make sure *planned* savings *pay off* on the assembly line.

A P-K Assembly Engineer will be glad to help you start making savings you've been missing. He'll call at your request. Parker-Kalon Corporation, 200 Varick St., New York 14.

PARKER-KALON®

Sold through Industrial Distributors, the Supply Specialists that serve you

The Original **SELF-TAPPING SCREWS**

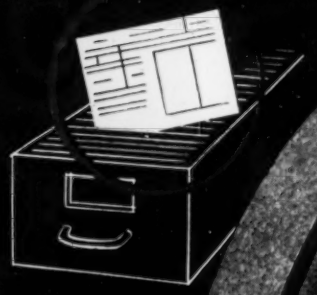
GET THIS NEW GUIDE TO LOWER ASSEMBLY COST

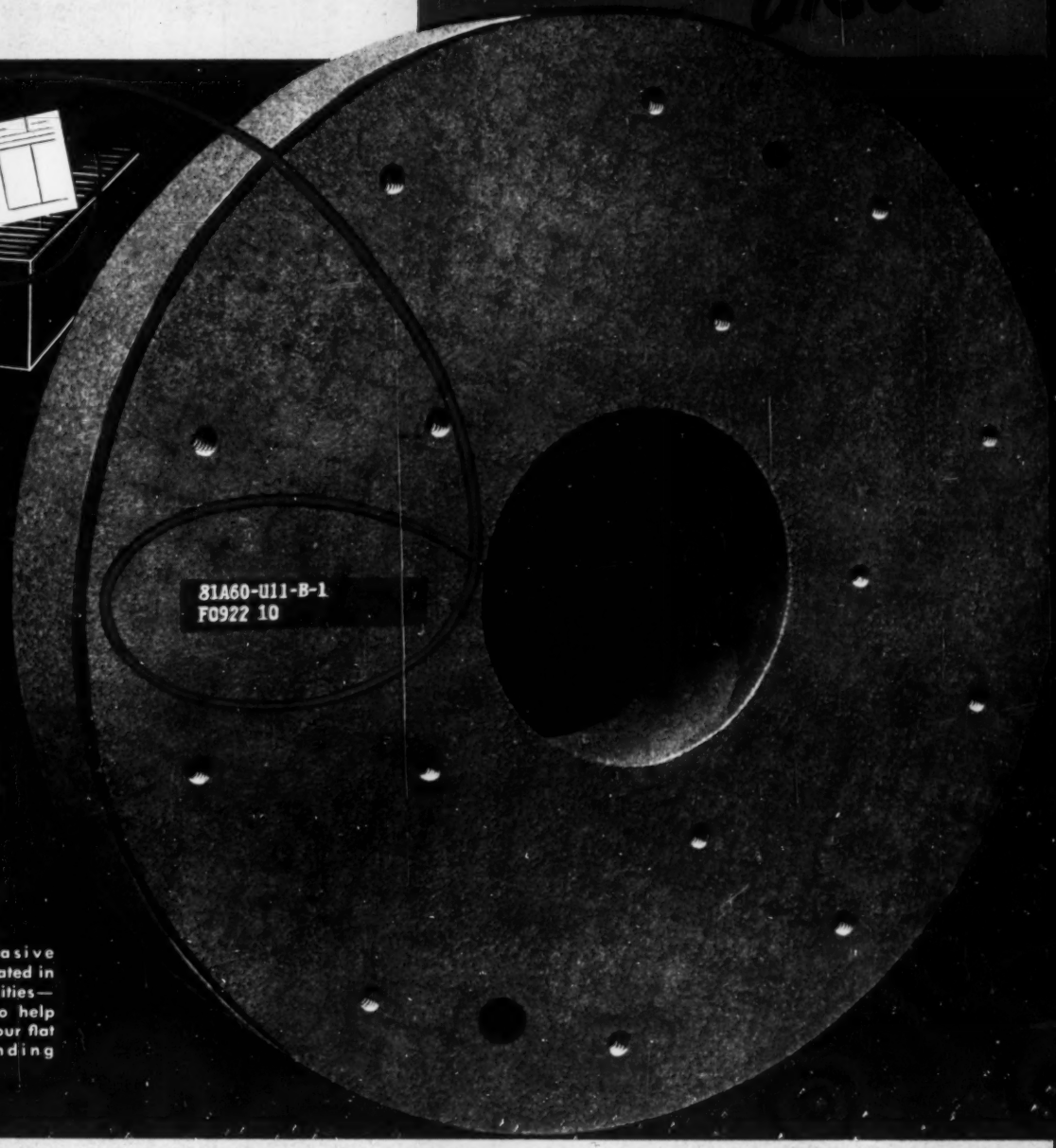
Filled with facts you need to make sure of a two-way saving when you plan assemblies. Ask your P-K Distributor, or write Parker-Kalon for Form 475-D.

**This mark △ on every P-K Self-tapping Screw identifies it as genuine.*

Customized Abrasive Discs Fitted To Your Grinding Needs

GARDNER abrasive discs





Gardner Abrasive Engineers—located in all principal cities—will be glad to help you with all your flat surface grinding problems.

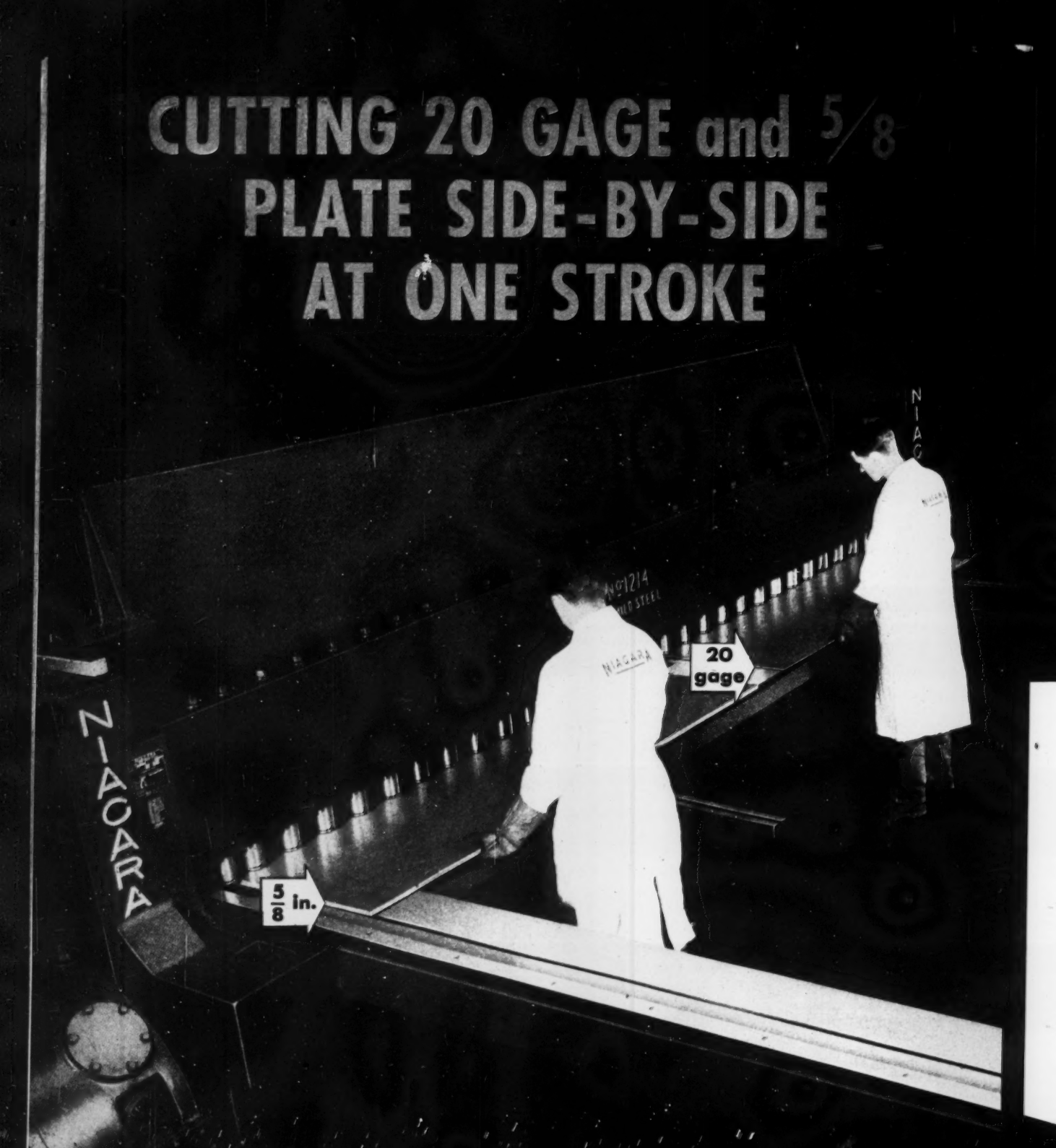
Send for Gardner Abrasive Disc Guidebook for better surface grinding results.

Gardner varies abrasive type, grain size and structure until you get the *best* abrasive to meet your job requirements. You get a Gardner Customized Abrasive that meets your needs for production, stock removal, finish, tolerance. Once your specific formulation is determined, the card record goes into our permanent file. Grinding results on reorders will be duplicated because your specific abrasive formulation has been duplicated. 109 A

GARDNER MACHINE COMPANY

428 East Gardner Street • Beloit, Wisconsin, U. S. A.

CUTTING 20 GAGE and 5/8 PLATE SIDE-BY-SIDE AT ONE STROKE



Photograph shows operators cutting ⅝" plate and 20 gage sheet steel simultaneously on NIAGARA Power Squaring Shear. No change in knife adjustment is necessary.

The ability of Niagara Power Squaring Shears to cut thick and thin plate both at the same time with the same knife setting is a dramatic demonstration. Visitors at our plant can see this done every day.
There is no necessity for tinkering with the knife adjustment.

Demonstrates The Sound Engineering Design of

NIAGARA

POWER SQUARING SHEARS

● There is no compromise with sound, proven engineering when it comes to NIAGARA shear design and construction.

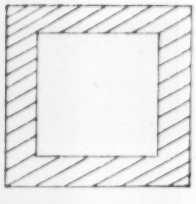
Accurate cutting depends primarily on rigidity of the shear's components.

For bed, crosshead and holddown NIAGARA uses CLOSED BOX SECTIONS to resist with minimum deflection the horizontal, vertical and diagonal or torsional loads to which every shear is subjected.

NO OTHER SECTION WILL DO THIS JOB AS EFFICIENTLY.

Angle or channel shaped sections have long since been abandoned for use on NIAGARA Power Shears.

The economy of quality is remembered long after price is forgotten.

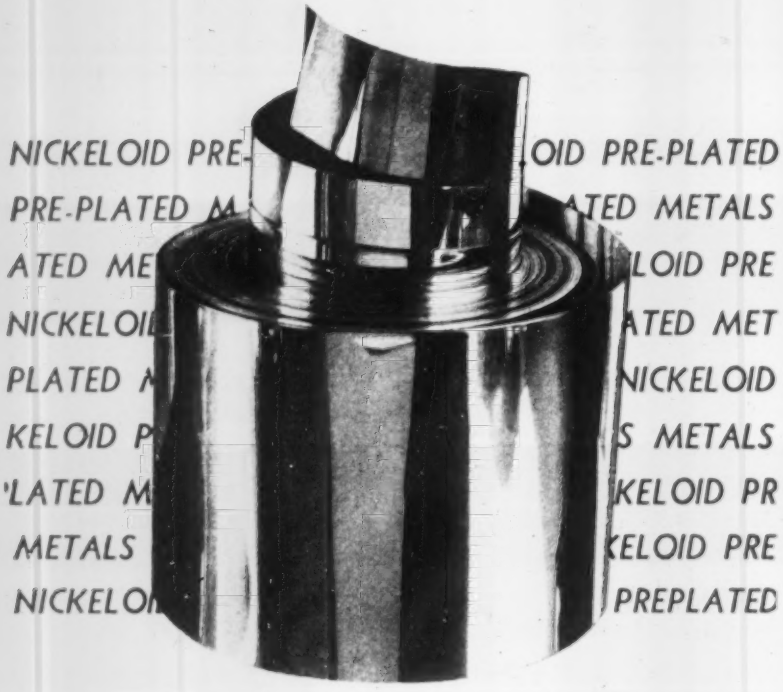


BED, CROSSHEAD & HOLDDOWN DESIGN

NIAGARA MACHINE AND TOOL WORKS, BUFFALO 11, NEW YORK

DISTRICT OFFICES: DETROIT, CLEVELAND, NEW YORK

WHAT'S YOUR LINE?



Beauty of finish, practical adaptation to modern production methods are the outstanding features of Nickeloid Pre-Plated Metals

Consider the possibilities! Five common base metals pre-plated with four distinct finishes . . . and in addition, tints, stripes, crimps and embossed patterns . . . in sheets or coils. You can combine utility values with decorative "eye appeal" by selecting from this wide range of Nickeloid Metals. These are your *finished* raw materials . . . ready for production and assembly.

NICKELOID METALS (Pre-Plated)
NICKEL · CHROMIUM · BRASS · COPPER
Electro-plated TO ALL COMMON Base METALS
ALSO LACQUERED COLORS
SHEETS AND COILS
OLDEST AND LARGEST PRODUCERS OF PRE-PLATED METALS

A Nickeloid sales engineer will be glad to call and give you more information about these modern metals and to provide working samples.

AMERICAN NICKELOID COMPANY

Established 1898

PERU 1, ILLINOIS

Do you make metal products? Maybe bird cages or flashlights? Easy to use . . . economical Nickeloid Metals add sparkling beauty to good product design, whether these metals are used in part or on the whole of your finished item. Here's a partial listing of products using Nickeloid Metals:

ELECTRICAL APPLIANCES

Broilers	Hot Plates
Deep Fat Fryers	Toasters
Electric Fans	Rotisseries

HOUSEWARES ITEMS

Bird Cages	Canister Sets
Door Chimes	Flour Sifters
Serving Trays	Bathroom Scales
Waste Baskets	Wax Paper Dispensers
Step-On Cans	Bread Boxes

STOVES AND HEATERS

Louvres	Stove Pipe
Space Heaters	Hearth Plates
Splash Back Panels	Door Handles
Broiler Grids	Stove Pads
Instrument Panels	Control Knobs

LIGHTING FIXTURES

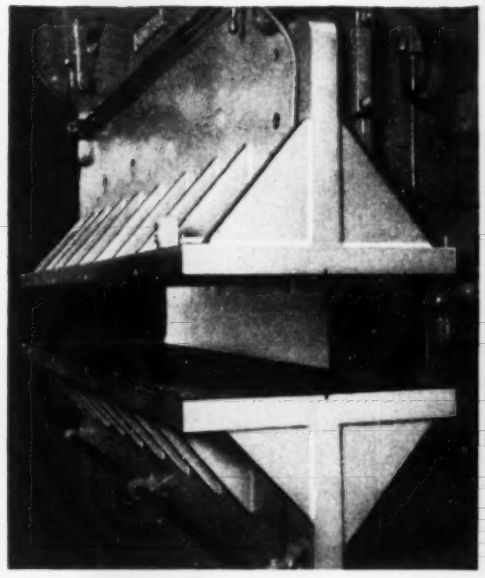
Ceiling Lamps	Pin-Up Lamps
Fluorescent Fixtures	Mirror Side Lights
Lamp Shades	Ozone Lamps
Light Reflectors	Recessed Lights

POINT OF SALE DISPLAYS

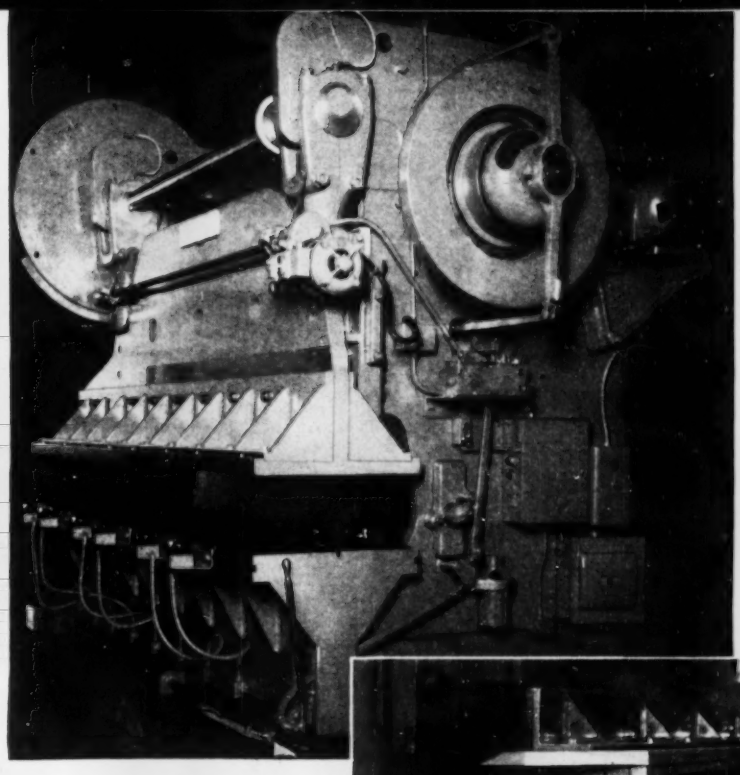
Neon Signs	Cut-Out Letters
Counter Displays	Menu Signs
Name Brand Signs	Merchandise Racks

MANY OTHER PRODUCTS

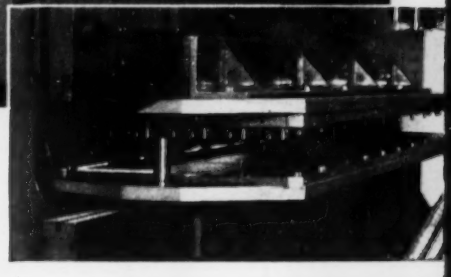
Nameplates	Switch Plates
Napkin Dispensers	Moulding & Trim
Loose Leaf Devices	Metal Specialties
Auto Accessories	Brush Ferrules
Flashlights	Badges & Tags
Juke Boxes	Toys & Games
Pencil Sharpeners	Stampings



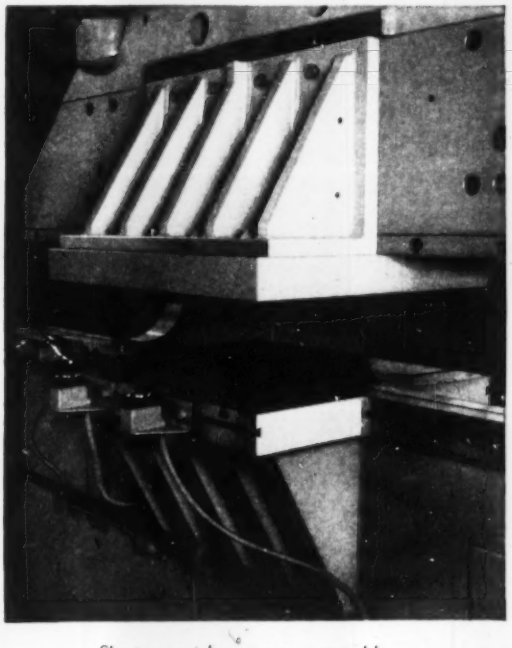
Large area, permanent wide bed and ram for press work



Large area, removable upper brackets



Large area, removable upper and lower brackets



Short, special purpose, removable upper brackets

JUMBO DIE AREAS..

on CINCINNATI PRESS BRAKES

With Cincinnati wide rams and beds, Cincinnati Press Brakes are now being used for both PRESS and PRESS BRAKE work

These wide rams and beds are of two basic types—the permanent type for Press work only; the removable bracket type for general purpose requirements. With removable brackets, Cincinnati Press Brakes are dual purpose and function as Presses but also retain all the versatility of a Press Brake.

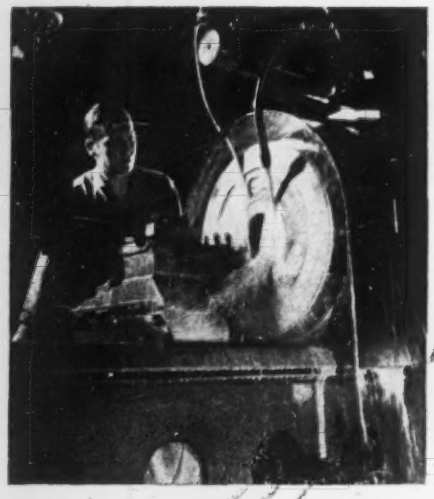
Both removable and permanent types of wide rams and beds are furnished in dimensions and areas to fit your particular requirements. We illustrate some of the combinations available on new machines.

Investigate!! Our Engineering Department will be glad to advise you on the profit and production possibilities of this new development in your shop. Write for Catalog B-2.

THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO U.S.A.

SHAPERS · SHEARS · BRAKES



To avoid trouble—
don't invite it!

One way to avoid costly machine tool breakdowns and down-time is to head off the trouble before it starts—with a positive preventive maintenance program.

Another way—and an important one—buy the machine that is backed by an industry-wide reputation for long years of trouble-free service.

When the going gets tough—put it on the Warner & Swasey!

WARNER & SWASEY
Cleveland
PRECISION MACHINERY SINCE 1880

You can produce it better, faster, for less with Warner & Swasey Machine Tools, Textile Machinery, Construction Machinery

Here is perfection!

ROEBLING makes the finest high carbon wire available to industry today. Roebling wire is absolutely true to specifications . . . absolutely uniform in gauge and finish. Manufacturers who try Roebling wire once, become Roebling customers from then on.

You *pay* for the best when you buy high carbon wire. Make sure that you *get* it! Always specify Roebling. John A. Roebling's Sons Corporation, Trenton 2, N. J.

The Jonker, world's largest emerald-cut diamond.

ROEBLING

A subsidiary of The Colorado Fuel and Iron Corporation

BRANCHES: ATLANTA, 934 AVON AVE. • BOSTON, 51 SLEEPER ST. • CHICAGO, 5525 W. ROOSEVELT RD. • CINCINNATI, 3253 FREDONIA AVE. • CLEVELAND, 13225 LAKEWOOD HEIGHTS BLVD. • DENVER, 4801 JACKSON ST. • DETROIT, 915 FISHER BLDG. • HOUSTON, 6216 NAVIGATION BLVD. • LOS ANGELES, 5340 E. HARBOR ST. • NEW YORK, 19 RECTOR ST. • ODESSA, TEXAS, 1920 E. 2ND ST. • PHILADELPHIA, 230 VINE ST. • SAN FRANCISCO, 1740 17TH ST. • SEATTLE, 900 1ST AVE. S. • TULSA, 321 N. CHEYENNE ST. • EXPORT SALES OFFICE, TRENTON 2, N. J.

TRAILMOBILE INC. Reports...

"50% SAVED"

LORAIN CRANE

Saves time and dollars on material handling jobs

"UNLOADS STEEL, AXLES, ALUMINUM, TUBING AND MACHINERY"

"TRAVELS ALL OVER PLANT YARD... UP TO 1 MILE PER DAY"

"HANDLES LARGER BUNDLES, SAFER, EASIER AND QUICKER"

"NO LOST TIME WITH *LORAIN CRANE*"

The quotes above are by Mr. Joseph P. Simon, Receiving Foreman at Trailmobile, Inc., Cincinnati, Ohio. He's talking about the performance of their mobile 15-ton Lorain Self-Propelled Crane, Model SP-254. This well-known manufacturer of trucks and trailers has found these important time and money-saving advantages from the use of their rubber-tire Lorain.

The same advantages can be applied to your material handling problems . . . for these same reasons. Lorain Self-Propelled Cranes are one-man operated — one man does the work of a crew. They roll on big rubber tires at 7 m.p.h. anywhere you want to lift, load or carry. Air steering makes these mobile Lorains extremely maneuverable and easy to handle. Sixteen or more crane boom attachments permit handling any size, shape or type material. Long booms can stack high, reach far — save valuable yard space.

Lorain material handling cranes on rubber are available in capacities from 6 to 45 tons. Investigage the many advantages of the size to fit your plant. Your local Thew-Lorain Distributor can give you facts!

THE THEW SHOVEL CO., LORAIN, OHIO

See you at BOOTH 1325B

5th NATIONAL MATERIALS HANDLING EXPOSITION
MAY 18-22, 1953
PHILADELPHIA

THEW LORAIN CRANES FOR INDUSTRY

1440 per hour

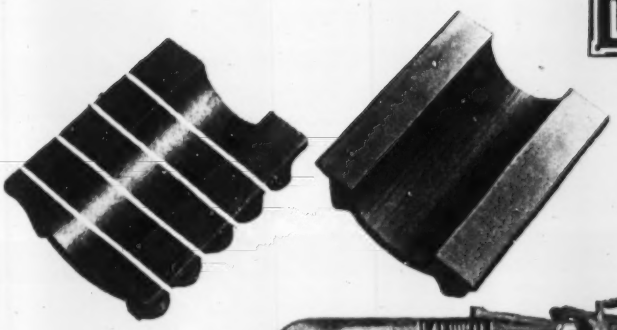
is the production rate in **BROACHING**

these **MAIN BEARING CAPS**

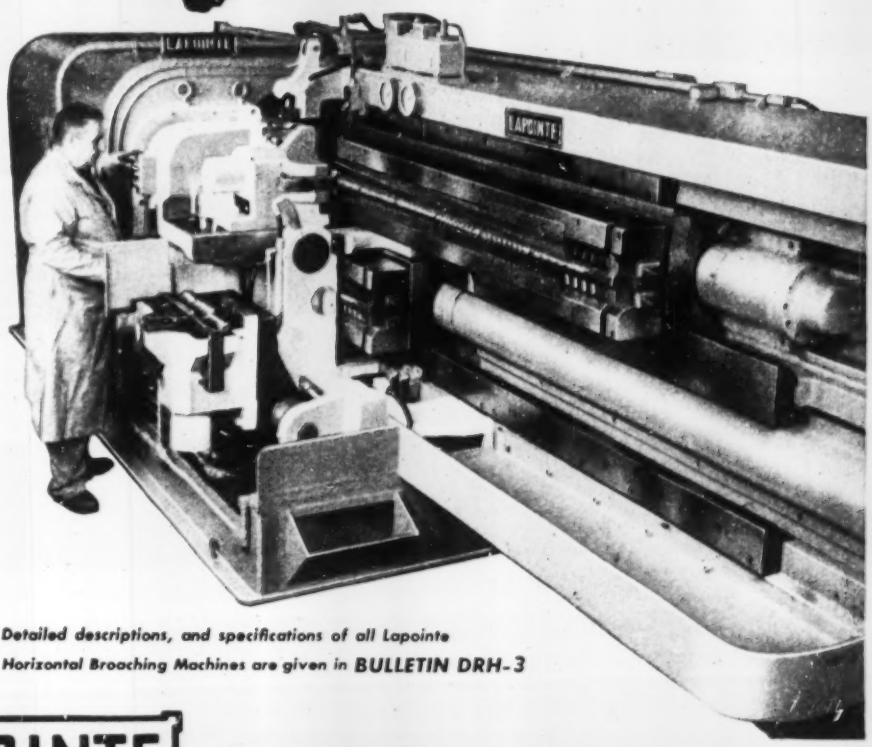
This high production is accomplished on the

LAPOINTE

Double Ram Horizontal Broaching Machine, 15-ton size, with 90-inch stroke *. . . using Carbide Broaches.*



Operating at 80 fpm cutting speed, these Main Bearing Caps are broached in clusters of 5, with the half-round, joint faces, and chamfered edges *all broached in one operation!*



SEND FOR FOLDER. *Detailed descriptions, and specifications of all Lapointe Horizontal Broaching Machines are given in* ***BULLETIN DRH-3***

THE LAPOINTE MACHINE TOOL COMPANY

HUDSON, MASSACHUSETTS • U. S. A.

In England: Watford, Hertfordshire

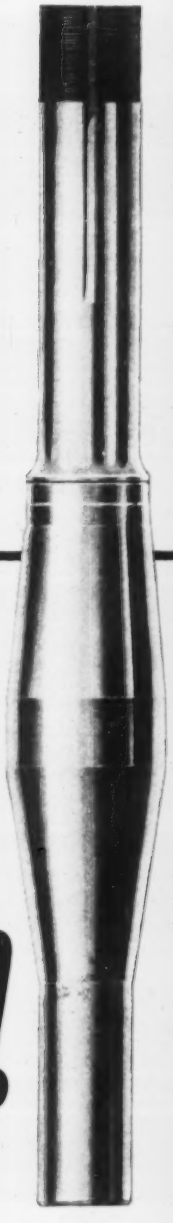
HUDSON LAPOINTE MASS.

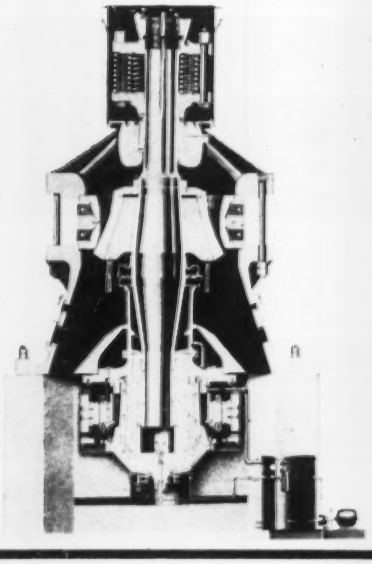
THE WORLD'S OLDEST AND LARGEST MANUFACTURERS OF BROACHING MACHINES AND BROACHES

This Kennedy-VanSaun

CRUSHER SHAFT

went to work on time





thanks to Standard Steel's

fast service!

To keep production moving without delays so that finished equipment may be shipped on schedule, Kennedy-Van Saun Manufacturing & Engineering Corporation realizes the importance of Standard Steel's ability to supply necessary materials on time. Vice President F. O. Reedy writes:

"A matter of great importance when contracting for the purchase of forgings is the problem of getting deliveries. We have found when Standard Steel Works, as contractors, make a promise of delivery, it is very dependable, and this is extremely important to us."

In addition they have found the analysis and quality of the steels used in Standard Steel forgings and castings contribute to most dependable performance records.

Thus another reason why you should standardize on Standard Steel forgings and castings to protect your reputation and the quality of your products is the fact that you can be certain of Standard's *fast service* without sacrifice of quality.

ONE OF SIX REASONS why you should always call Standard Steel for forgings and castings.

1 Quality Steel—through production of own steel by acid process.

2 Uniformity—assured by precise control of forging and rolling operations.

3 Fast Service—a vital factor in the continuing growth of Standard Steel for over 150 years.

4 Testing—radiographic tests, tensile tests, hardness tests, ultrasonic probing of internal structure, etc.

5 Capacity—unsurpassed ability to produce forgings and castings of unusual sizes and shapes, such as weldless rings all the way up to 144" O.D.

6 Experience—produced by skilled workmen with 20 to 40 years experience.

For more information write Dept. 8746

STANDARD STEEL WORKS DIVISION

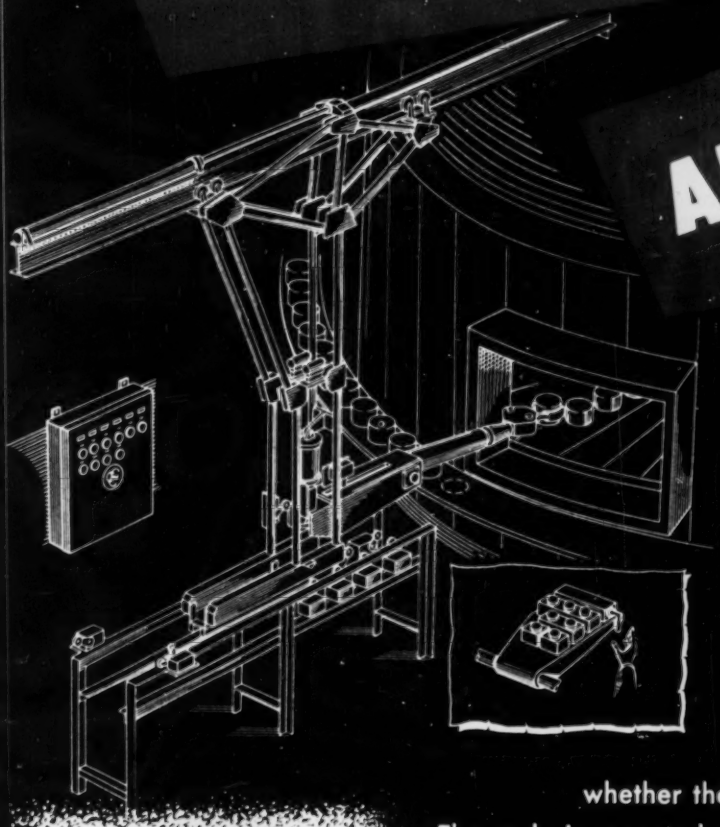
Burnham, Pennsylvania

BALDWIN · BLH · LIMA-HAMILTON

BALDWIN-LIMA-HAMILTON

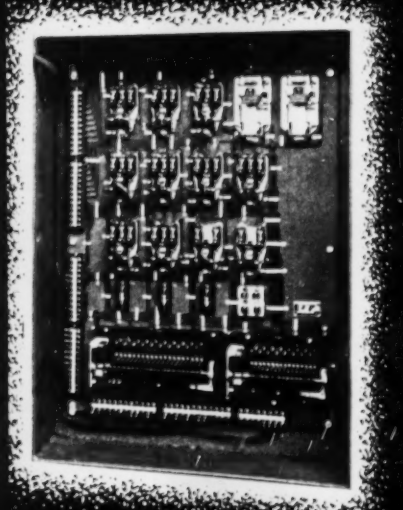
General Offices: Philadelphia 42, Pa. • Offices in Principal Cities

How's This For — AUTOMATION?



This mechanical hand is called a Billet Charging Machine. It automatically loads cylindrical steel billets into a rotary furnace, one row at a time, to be heated for forging.

The machine picks up a billet from the conveyor and sets it down inside the furnace. It repeats this operation until it has lined up a full row of billets. A selector switch determines whether there shall be three or four billets to a row. The cycle is repeated when the furnace rotates to the next loading position.



Seven separate motions are required to load each billet. Thus the complete cycle involves either 21 or 28 individually controlled motions for the row.

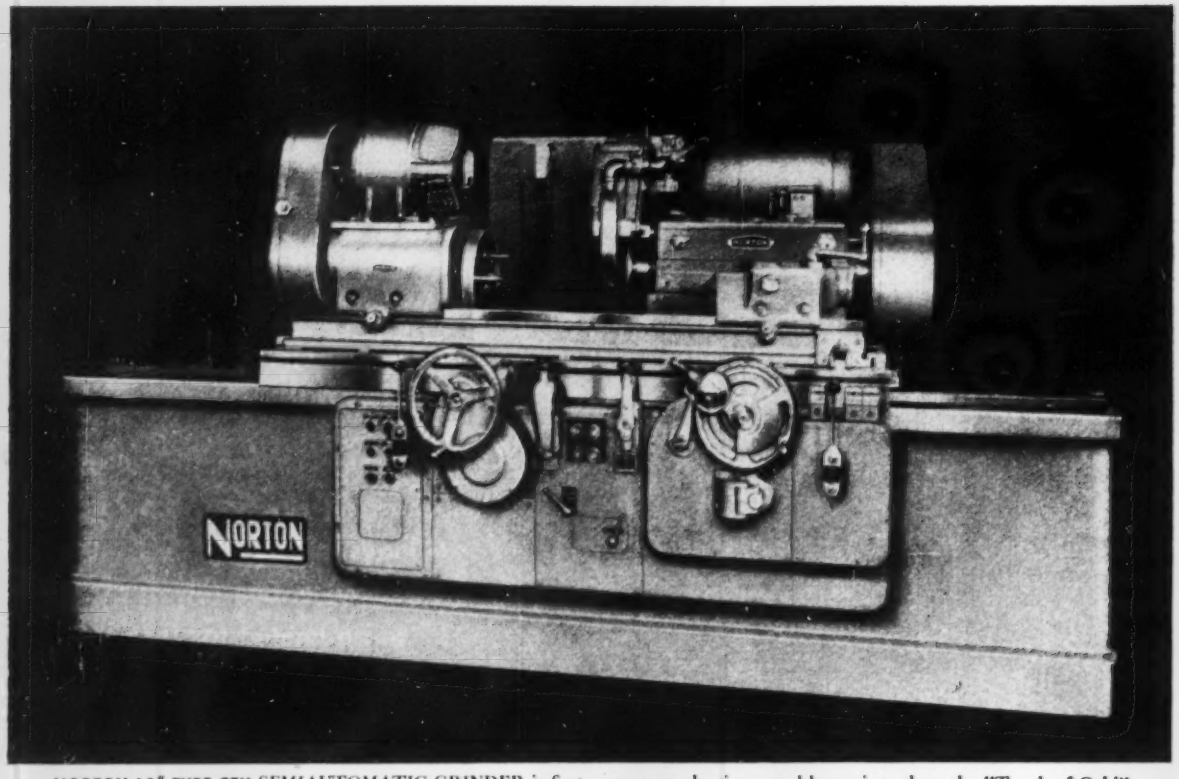
The Billet Charger was designed by E. Homer Kendall, Consulting Engineer, of Alliance, Ohio and built by May-Fran Engineering, Inc., of Cleveland. The special automatic control panel — the brain of the machine — is Clark designed and Clark built.

You can put CLARK Engineered Electrical Control experience to work for you. Just contact your nearest CLARK representative.

ENGINEERED ELECTRICAL CONTROL

THE CLARK CONTROLLER CO.

1146 EAST 152ND STREET, CLEVELAND 10, OHIO



NORTON 10″ TYPE CTU SEMIAUTOMATIC GRINDER is first choice in production lines and in job shops. No other cylindrical grinder offers you such a unique combination of speed, accuracy, flexibility and sturdiness. No wonder users have reported that Norton 10″ CTU's have doubled production . . . replaced 2 or 3 machines . . . eliminated extra operations . . . made operators more productive . . . and have given them the "Touch of Gold". *Catalog No. 1787* has complete data on sizes, advantages, features and optional equipment that help you put extra profits into your production. It will pay you to look into the high-speed, high-finish grinding this machine makes possible.

These cylindrical grinding machines give you "TOUCH OF GOLD" value . . . in your profit margins

The Norton CTU is such a money-maker it brings you the touch of gold. It adds value to each piece of work it handles — and it actually cuts the cost of grinding . . . thus adding to your product profits.

It's easy to see why. Your operator loads the work . . . *touches one lever* . . . and stands by while the machine does the rest . . . as easy as 1-2-3.

Work is automatically ground to size under electric timer control . . . and the wheel head resets itself for the next cycle.

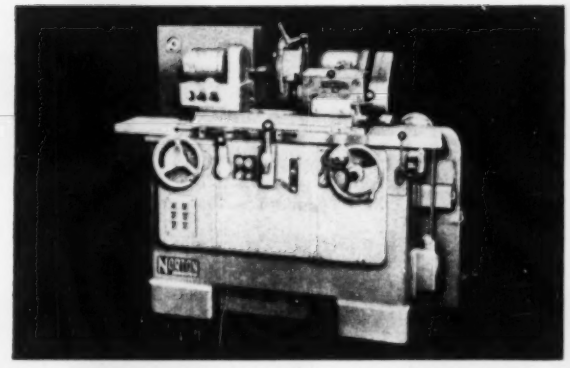
All three basic Norton CTU Semiautomatic Grinders: 4″, 6″, and 10″ offer you the same advantages over their different ranges of work sizes. You can also get the 6″ grinder with a 10″ swing and the 10″ grinder with a 14″ swing by specifying Type LCTU. The Norton line of Type CTU Cylindrical Grinders also includes plain machines for traverse grinding. Your Norton Representative will be glad to help you choose the one that best fits your requirements.

Norton Cylindrical Grinding Machines are just one phase of *the world's most complete line of grinders and lappers* . . . products of Norton's engineering leadership in the development of both grinding wheels and machines.

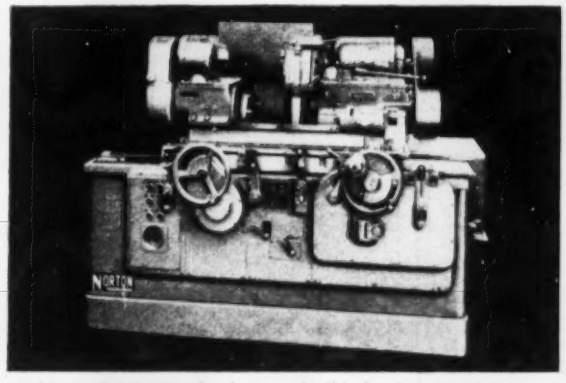
Remember — only Norton offers you such long experience in both grinding wheels and machines to help you produce more at lower cost . . . to have that "Touch of Gold."

Norton welcomes opportunities to work with you on the planning level to fit standard or special grinding machines into your immediate plans or for "post emergency" production.

For complete information, see your Norton Representative or write us direct for the catalogs listed under the machine illustrations. NORTON COMPANY, Machine Division, Worcester 6, Mass.



NEW NORTON 4" TYPE CTU Semiautomatic Grinder in 12" and 18" work length capacities now makes it practical for you to apply high-finish grinding for adding value to small parts. *Catalog No. 531* gives you full details.



NORTON 6" TYPE CTU Semiautomatic Grinder, in 18" and 30" work length capacities, has a performance record that's worth investigating. *Catalog 1488* tells the whole interesting story.

for your product

To Economize Modernize With NEW

NORTON

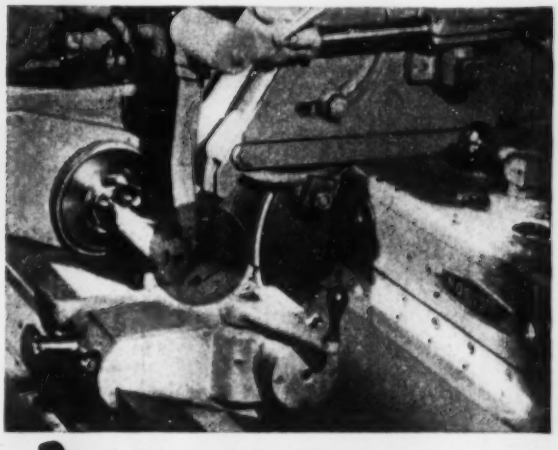
GRINDERS and LAPPERS

Making better products to make other products better

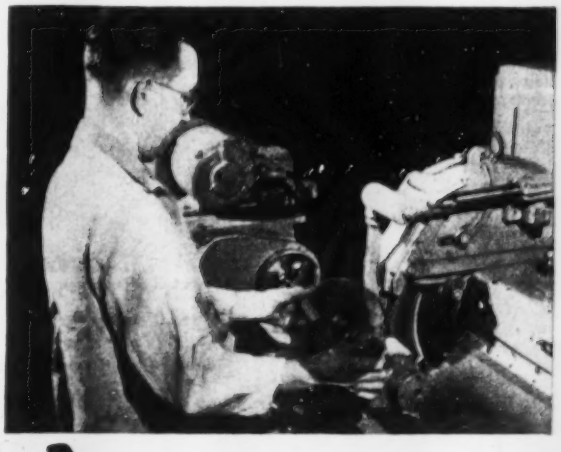
District Sales Offices: Hartford • New York • Cleveland • Chicago • Detroit
In Canada: J. H. Ryder Machinery Co., Ltd., Toronto 5, Ontario

EASY AS 1-2-3

1. Operator loads machine and touches starting lever.

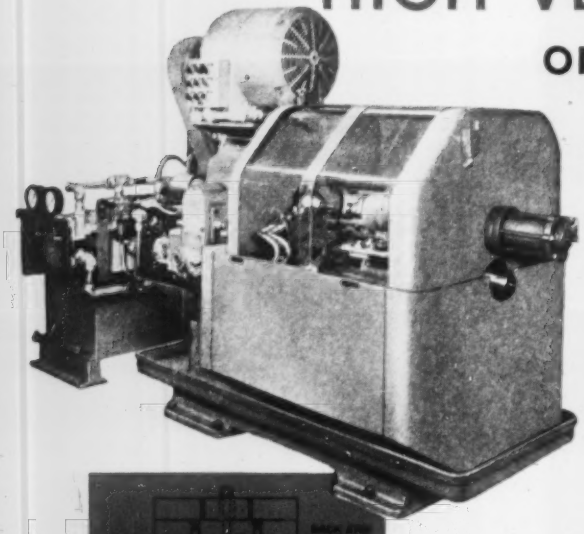


2. Machine automatically grinds part to required size and finish — while operator attends another machine.



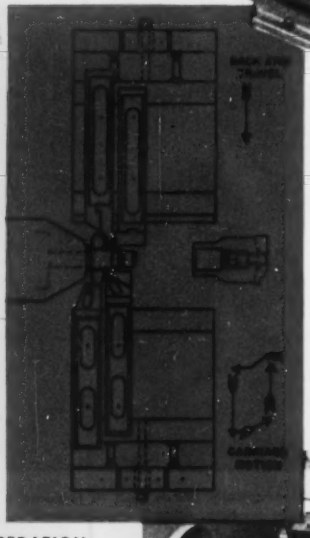
3. Operator unloads machine.

AUTOMATICITY BACKS UP HIGH VELOCITY TURNING ON FAY AUTOMATICS



SIDE GEARS
18 Seconds Floor to Floor — 635 SFM

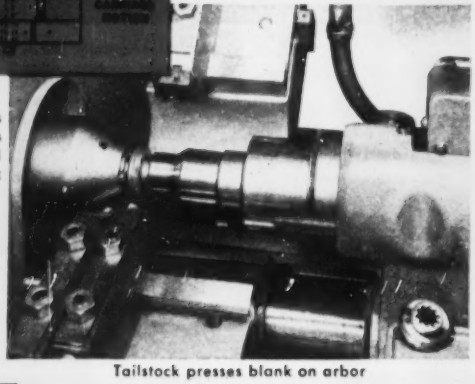
Two 8" Fays, with Automatic Sequential Control, machine all exterior surfaces of the blanks in two operations; one machine for each. The major diameter is 2-15/16" and floor to floor time is approximately 18 seconds in each operation.



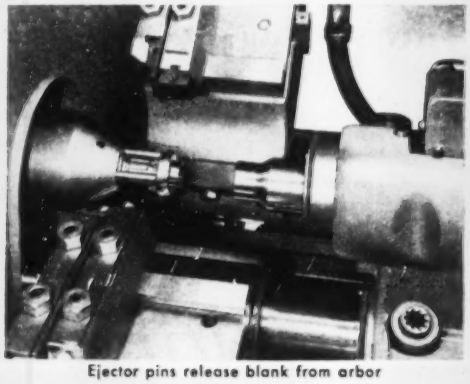
Automatic Cycle—The machines are equipped with automatically operated splash guards and automatically air-operated tailstock rams for pressing the blank onto a splined arbor equipped with automatically operated ejector pins.

The operator places the blank on the end of the arbor, and pushes the cycle start button. *Automatically, the guard closes, the tailstock ram presses the piece onto the arbor and then retracts. The carriage turns, the back arm faces, and at the end of the cuts, ejector pins push the piece onto the loading section of the arbor* from which it is removed manually.

FIRST OPERATION: Note intricate movements of the carriage, which turns the hub, back angle and major diameter. The back arm faces and forms.



Tailstock presses blank on arbor



Ejector pins release blank from arbor

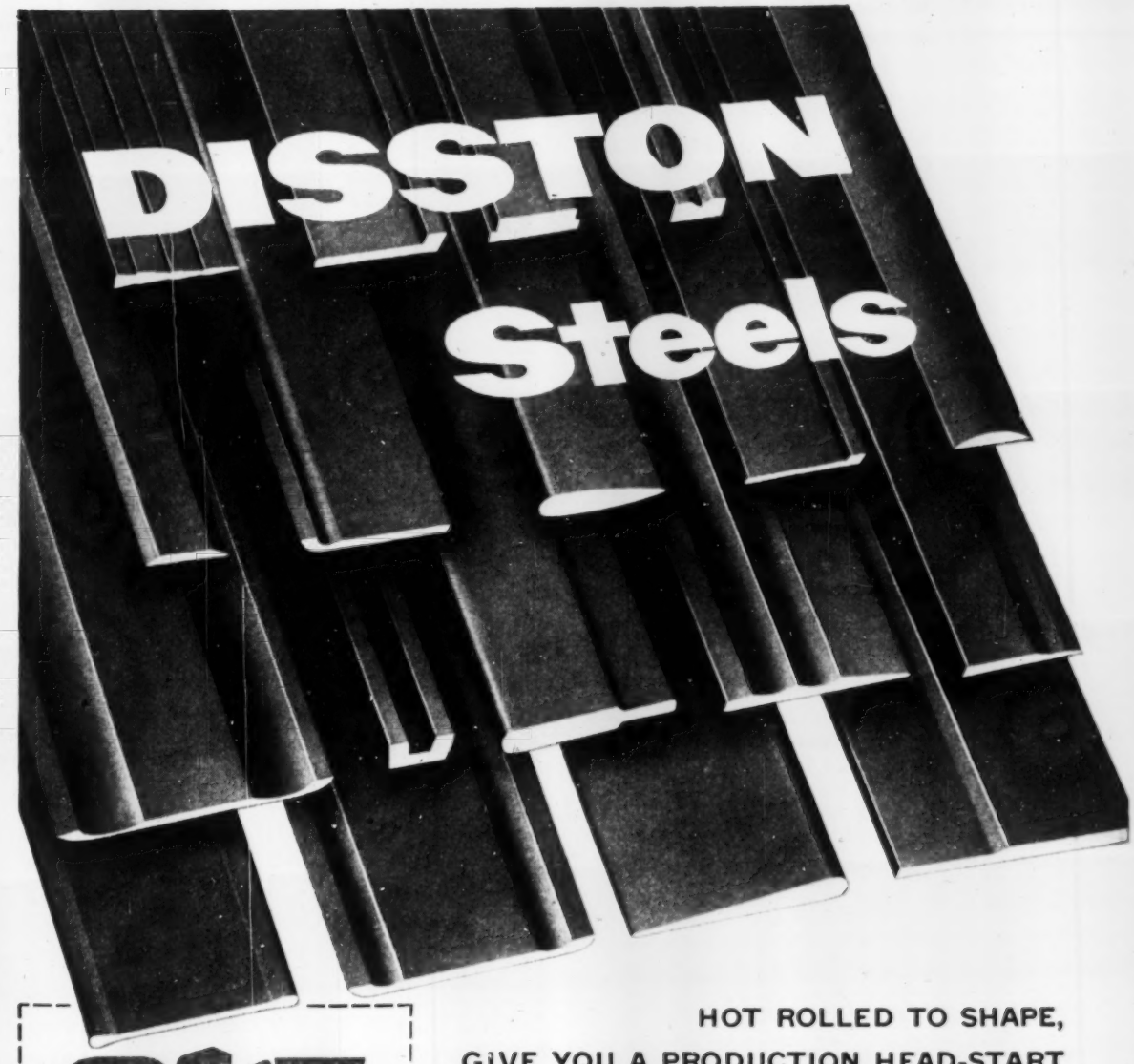
Production management regularly relies upon the engineering services of Jones & Lamson for the latest information on methods, costs, tooling and performance. Why not consult us about YOUR *turning, threading and inspection problems.*

JONES & LAMSON

Machine Tool Craftsmen Since 1835

JONES & LAMSON MACHINE CO., 517 Clinton St., Dept. 710, Springfield, Vt., U.S.A.

FAY LATHE DIVISION



A few of the many forms of Disston Hot Rolled Shapes now being used in industry.

HOT ROLLED TO SHAPE, GIVE YOU A PRODUCTION HEAD-START

It may be money-saving news to you that Disston can relieve you of much of the overhead in machining by delivering Disston Hot Rolled Steel Shapes to meet or closely approximate your specifications. These steel- and labor-saving shapes can be rolled in a variety of forms that should easily offer production short-cuts to you. Tolerances are close, and finishes are exceptionally fine. Disston Shapes can be made in either alloy or carbon steels, both electric and open hearth grades. Disston engineers and metallurgists are ready to work with you today. Write us, giving your needs.

HENRY DISSTON & SONS, INC.

426 Tacony, Philadelphia 35, Pa., U.S.A.

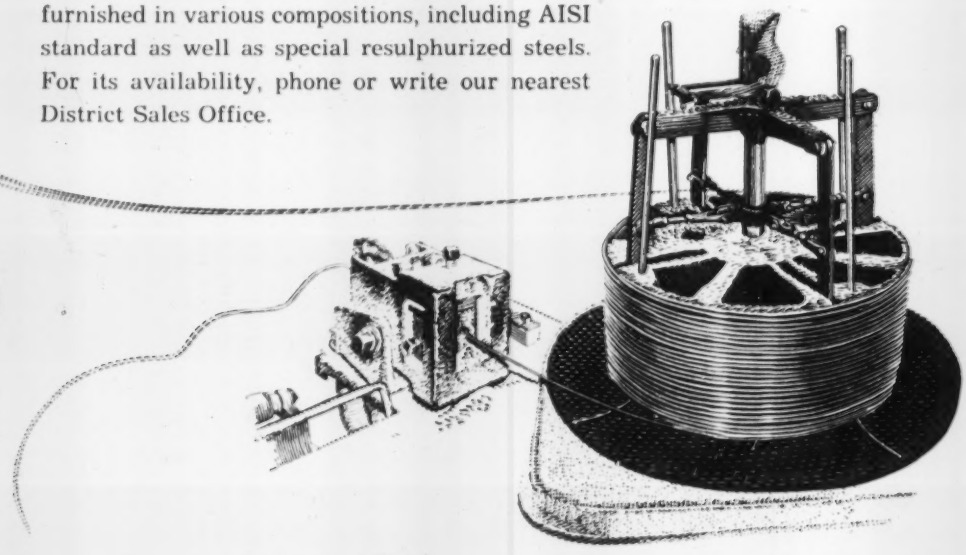
Custom built to customers' requirements...

YOUNGSTOWN SCRAPLESS NUT WIRE

●Scrapless Nut Quality Wire is not an ordinary steel for common applications. It is a custom-built product designed to meet customers' specific requirements for cold heading, cold forging, cold punching, cold expanding and threading, in the production of a variety of nut shapes on continuous cold heading and cold forging machines.

Every step of its manufacture is carefully controlled—from the melting furnaces to the final drawing operation on the wire machines. Each coil of wire is subjected to close inspection and rigid tests with modern electrical testing apparatus.

Youngstown's Scrapless Nut Quality Wire is furnished in various compositions, including AISI standard as well as special resulphurized steels. For its availability, phone or write our nearest District Sales Office.



QUALITY YOUNGSTOWN SERVICE

Youngstown SCRAPLESS NUT QUALITY WIRE

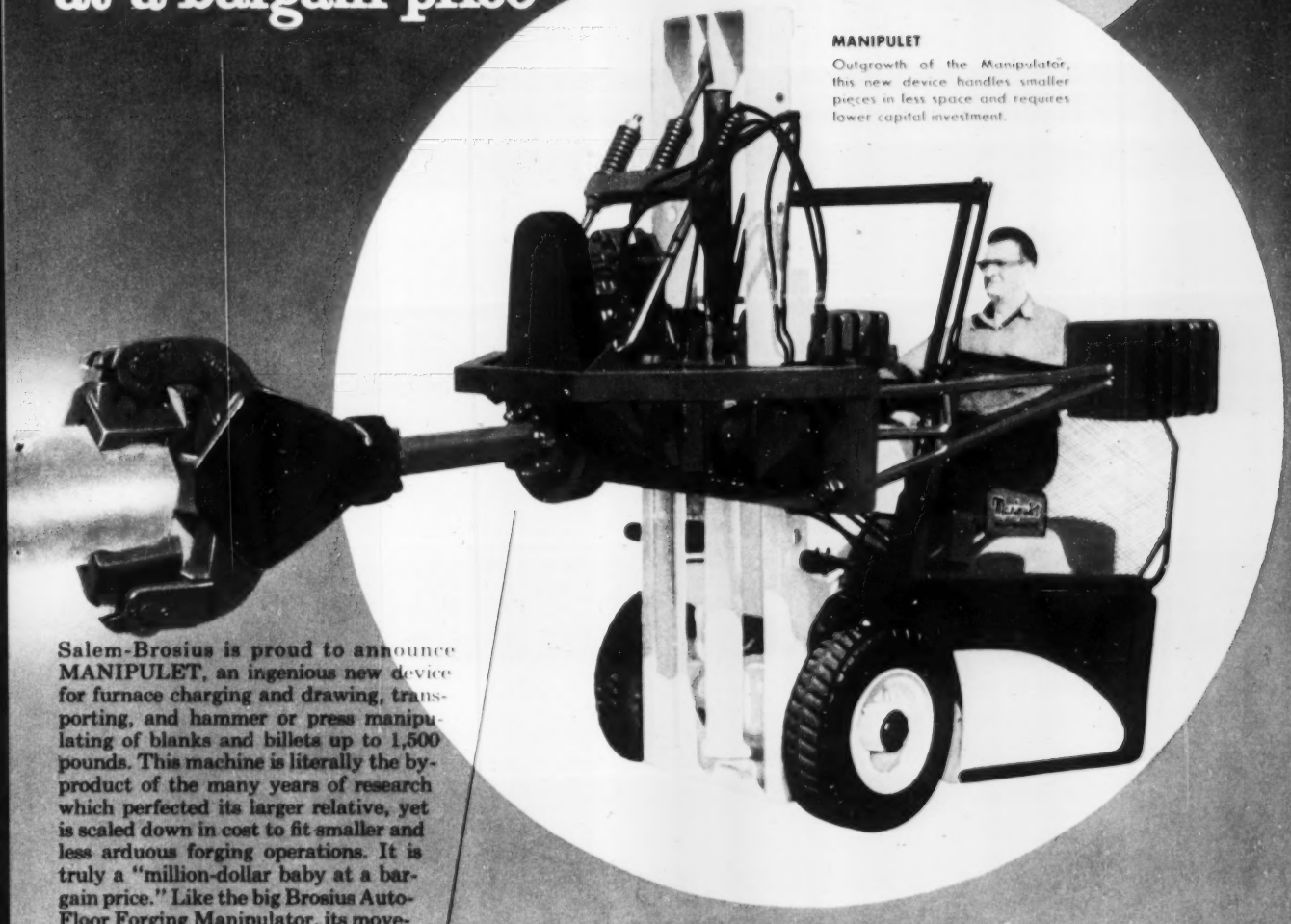
THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steel*

General Offices: Youngstown, Ohio - Export Office: 500 Fifth Avenue, New York 36, N. Y.

PIPE AND TUBULAR PRODUCTS - CONDUIT - BARS - RODS - COLD FINISHED CARBON AND ALLOY BARS - SHEETS - PLATES - WIRE - ELECTROLYTIC TIN PLATE - COKE TIN PLATE - RAILROAD TRACK SPIKES

MILLION DOLLAR BABY at a bargain price

MANIPULATOR
The years of research which perfected this heavy-duty machine resulted in a new invention.

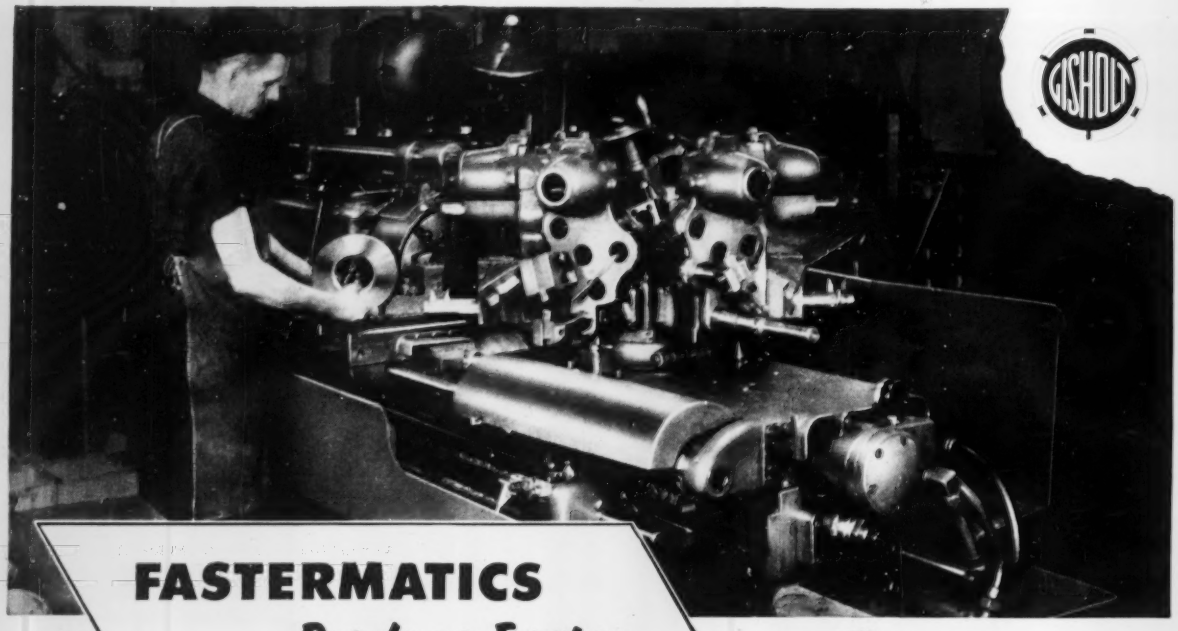


MANIPULET
Outgrowth of the Manipulator, this new device handles smaller pieces in less space and requires lower capital investment.

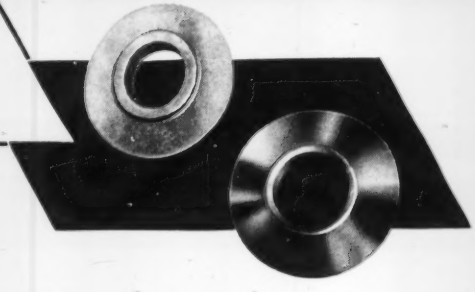
Salem-Brosius is proud to announce MANIPULET, an ingenious new device for furnace charging and drawing, transporting, and hammer or press manipulating of blanks and billets up to 1,500 pounds. This machine is literally the by-product of the many years of research which perfected its larger relative, yet is scaled down in cost to fit smaller and less arduous forging operations. It is truly a "million-dollar baby at a bargain price." Like the big Brosius Auto-Floor Forging Manipulator, its movements under hammer or press are extremely sensitive. It raises and lowers a forging piece, tilts it up or down, and rotates it . . . in fact, the Manipulet does everything possible with chain hoist and porter bar with far greater speed, safety and precision. Because of its unique ability to move into position, grasp and carry, while the operator remains at a safe distance, its use has already been suggested for handling other relatively heavy objects such as gas cylinders and boxes of radio-active material. If the Manipulet seems to fit your materials-handling problem—either forging or otherwise—please write to us for further information.

SALEM-BROSIUS, INC.

SALES AND EXECUTIVE OFFICES: 248 FOURTH AVENUE, PITTSBURGH 22, PA.



FASTERMATICS
Produce Faster— Pay Off Faster

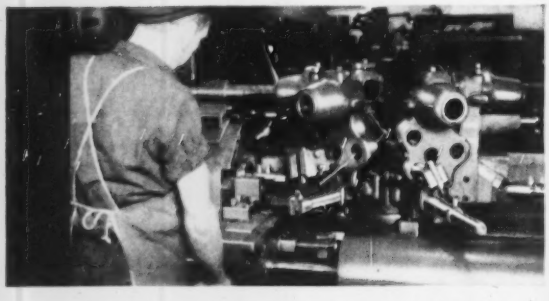


It may seem incredible, in this day and age, for any major machine tool to "buy" itself in nine short weeks of operation. But that's exactly what the Fastermatic Automatic Turret Lathe did on this job of machining clutch plate hubs.

Former time, on hand-operated turret lathes, was 15 minutes per piece. The Fastermatic, with automatic control of all machine functions, reduced the time to only 3 minutes, floor to floor.

Earnings piled up so fast over former production costs that the Fastermatic paid for itself in just 9 weeks—or 893 hours of operation.

Do you have work that permits a number of cuts in one chucking? Investigate the Fastermatics. You may have a big opportunity to increase production, cut costs and save man power.

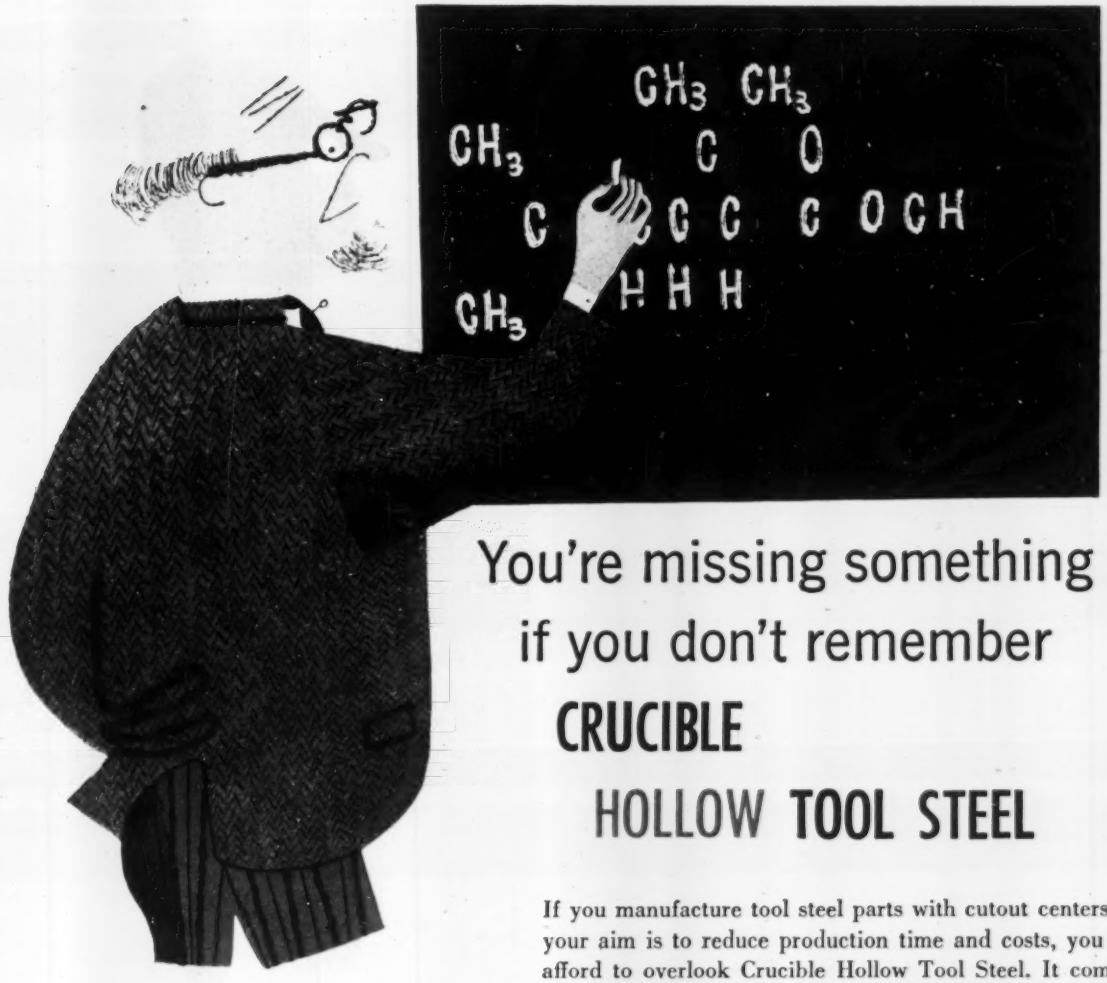


In this tooling setup, only 3 turret faces are needed to turn each part. With duplicate tooling on the remaining 3 faces of the hexagon turret, 2 parts are machined with each complete turret cycle. The operator merely loads and unloads the work.

THE GISHOLT ROUND TABLE *represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.*

GISHOLT
MACHINE COMPANY
Madison 10, Wisconsin

TURRET LATHES • AUTOMATIC LATHES • SUPERFINISHERS • BALANCERS • SPECIAL MACHINES



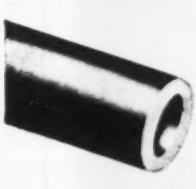
You're missing something if you don't remember CRUCIBLE HOLLOW TOOL STEEL

If you manufacture tool steel parts with cutout centers, and your aim is to reduce production time and costs, you can't afford to overlook Crucible Hollow Tool Steel. It comes in three famous grades: KETOS, AIRDI 150 and SANDERSON.

You don't have to drill and bore solid bars anymore. For these quality brands of tool steel are immediately available with machine-finished inside and outside diameters and faces — cut to your specific length requirements. And they come in a wide range of sizes.

By eliminating drilling and boring operations, Crucible Hollow Tool Steel will lower your production time per unit . . . increase your machine capacity . . . and reduce your scrap losses.

For full information and literature, call your nearest Crucible warehouse . . . or write for new brochure describing Crucible Hollow Tool Steel. Address Dept. S, Crucible Steel Company of America, Chrysler Building, New York, N. Y.



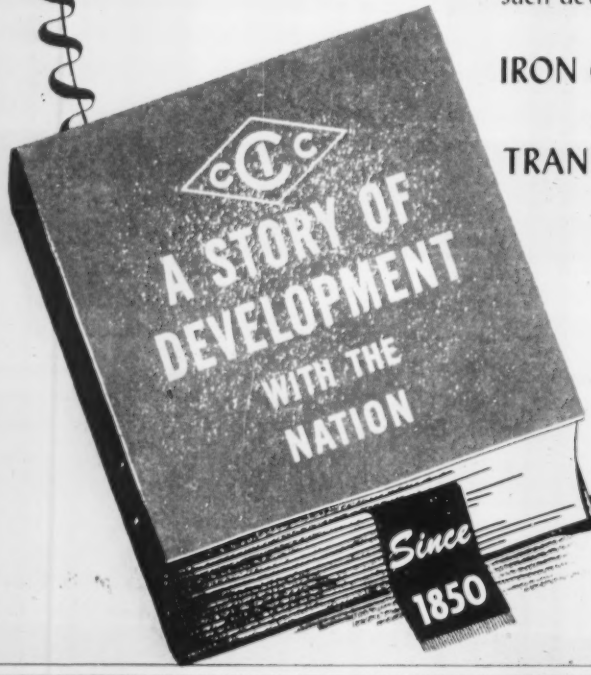
CRUCIBLE first name in special purpose steels

53 *years of* Fine *steelmaking*

HOLLOW TOOL STEEL

CRUCIBLE STEEL COMPANY OF AMERICA • TOOL STEEL SALES • SYRACUSE, N. Y.

For more than a century the advance of this country into its present position of leadership among the nations of the world has been paced by the production and transportation of the necessary ores from which have been made the metals which have made such development possible.

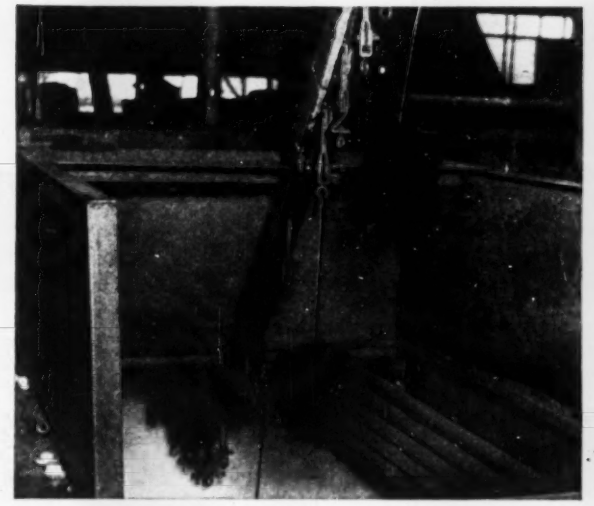


IRON ORE • ALLOYS
VESSEL TRANSPORTATION
COAL

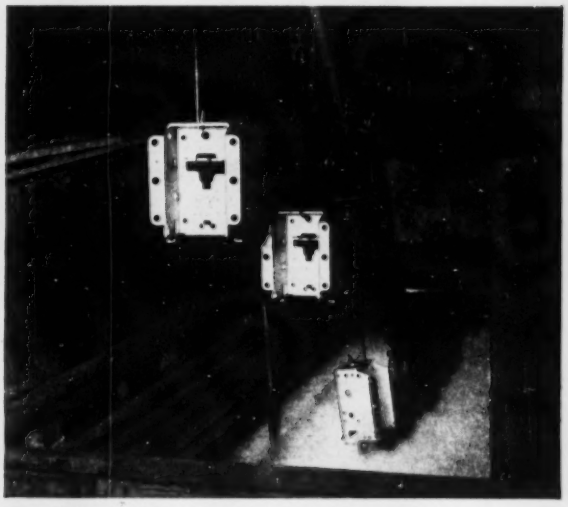
THE Cleveland-Cliffs IRON COMPANY

UNION COMMERCE BUILDING • CLEVELAND 14, OHIO

THE MODERN SOLVENT THAT FITS EVERY VAPOR DEGREASING NEED



GREASE-COVERED switch gear housings enter vapor degreasing unit by conveyor. A system such as this permits smooth, even flow of housings at high production speed.



CLEAN, WARM AND DRY—the housings emerge from the unit ready for inspection, assembly or further processing—in less than a minute.

DU PONT "TRICLENE" D

(TRICHLORETHYLENE)

cleans hard-to-reach surfaces in less than a minute

You can clean intricate metal parts easily and thoroughly with "Triclene" D. This rugged solvent goes after the heaviest contaminants . . . routs them from seemingly inaccessible places.

Stable and pure "Triclene" D has been carefully developed over the past twenty years—ever since Du Pont pioneered synthetic solvents for vapor degreasing. It is designed for efficient operation in all types of degreasing equipment . . . removes even the most stubborn of today's buffing and machining compounds. And its narrow boiling range simplifies solvent recovery for economical re-use.

DISTRICT OFFICES: Boston • Charlotte • Chicago • Cincinnati Cleveland • Detroit • El Monte (Calif.) • New York • Philadelphia

Du Pont metal cleaning specialists are experienced in keeping degreasing installations at peak efficiency. They will be glad to assist you in all phases of your metal cleaning program. For this friendly service, simply get in touch with your nearest Du Pont district office.

THIS VALUABLE INFORMATION IS YOURS—FREE

You'll find complete information on the operation and maintenance of vapor degreasing equipment in these booklets. And interesting up-to-date case histories about degreasing units in operation throughout the metal field are presented in our publication, "MODERN METAL FINISHING." You can receive this wealth of information by checking the appropriate boxes in the coupon below and returning it to us.

E. I. du Pont de Nemours & Co. (Inc.)
Electrochemicals Dept., Wilmington 98, Del.

Please send me more information on vapor degreasing and "Triclene" D. I am interested in receiving the literature checked below.

- ☐ Free booklets on vapor degreasing
- ☐ Free publication "MODERN METAL FINISHING" (Please add my name to the mailing list)

*Name*_____ *Position*_____

*Firm*_____

*Address*_____

*City*_____ *State*_____

DU PONT
first in solvents for
VAPOR DEGREASING

DU PONT

BETTER THINGS FOR BETTER LIVING
... THROUGH CHEMISTRY

GENERAL-PURPOSE CONTROL

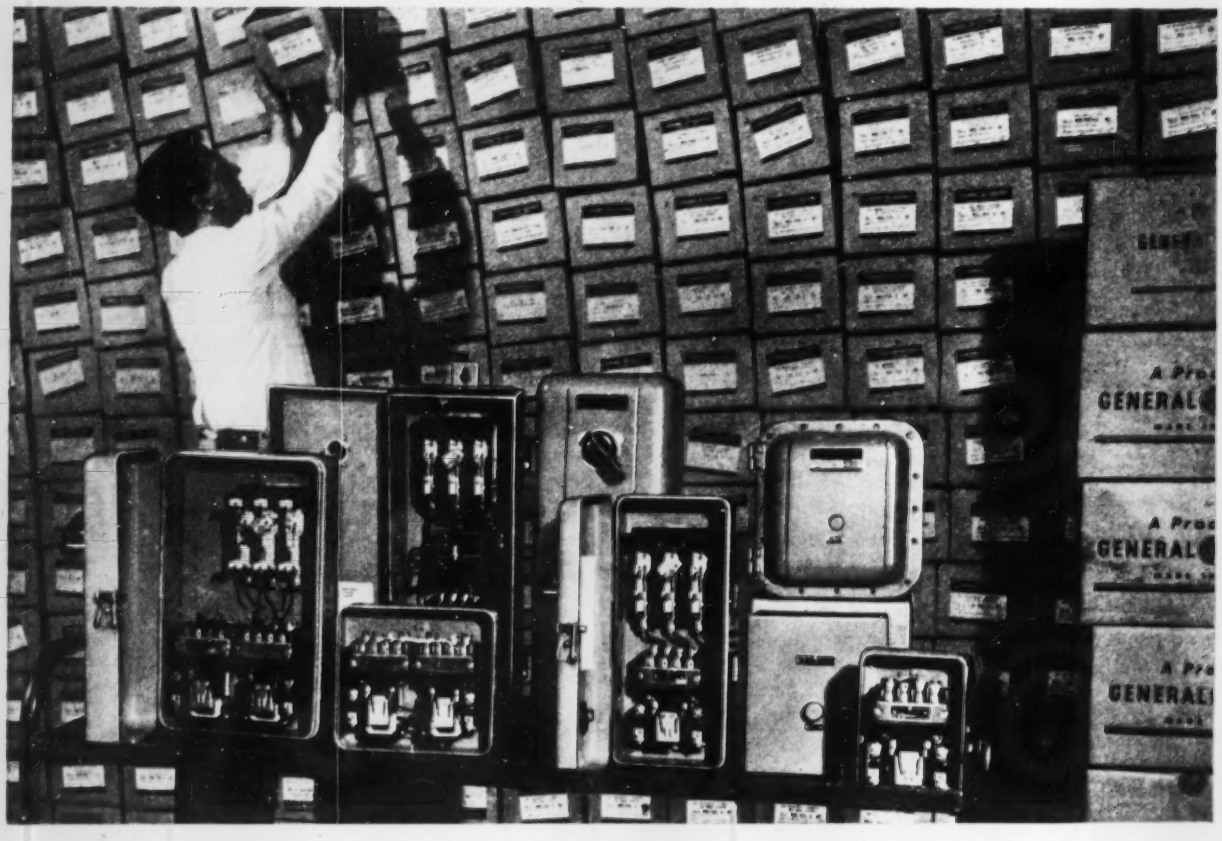
Fhp motor starter

1—7½ hp manual motor starters

A-c magnetic motor starter

Combination motor starter

Reversing motor starter



Meet Any Motor-Starting Application With A Dependable G-E Magnetic Starter

Thousands of Forms Available

No matter what your requirements, you can get a G-E starter to fit your application. Hundreds of variations of across-the-line, combination, reversing and multi-speed starters are available for a-c motors.

Every form pictured above has the same basic contactor that has proved its superiority again and again in severe industrial applications. You can choose from literally thousands of combinations of the contactor, shown at the right, and its accessory components, to get the best control for your particular motor application.

EXTRA INTERLOCK CONTACTS—as many as four on sizes 0 and 1, three on sizes 2 and 3—can be added to the standard starter for your application.

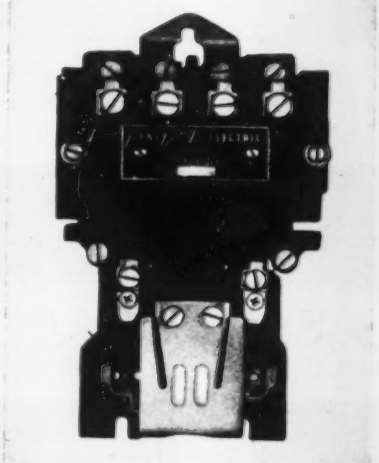
CONTROL TRANSFORMERS for operator protection, extra overload relay for motor protection, and control relays are available as standard components.

EITHER START-STOP push buttons or Hand-Off-Auto selector switches can be mounted in the starter cover.

ENCLOSURES for every motor application include general purpose, watertight, dust-tight, semidust-tight, and explosion-proof. Enclosures that meet JIC specifications are also available.

ALL STARTERS have plenty of wiring space. Contacts, coils and overload relays can be removed quickly, conveniently.

Contact your nearest G-E apparatus sales office or authorized agent or distributor for your starters. Write for Bulletin GEC-880 for more details.



INFORMATION FOR PRODUCTION AND MAINTENANCE

Reduced voltage starter

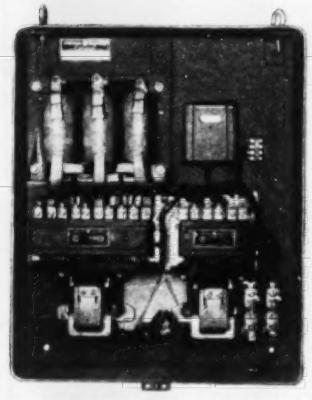
Heavy and standard-duty push-button stations

General-purpose relay

A-c and d-c solenoids

Roller-lever type limit switch

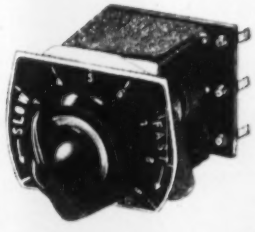
Rotating-type limit switch



G-E REDUCED-VOLTAGE MAGNETIC STARTER SOLVES POWER PROBLEMS

When load limitations prohibit motor starting at full voltage, this autotransformer-type starter controls and protects the operation of motor-driven pumps, conveyors, compressors, blowers, etc.

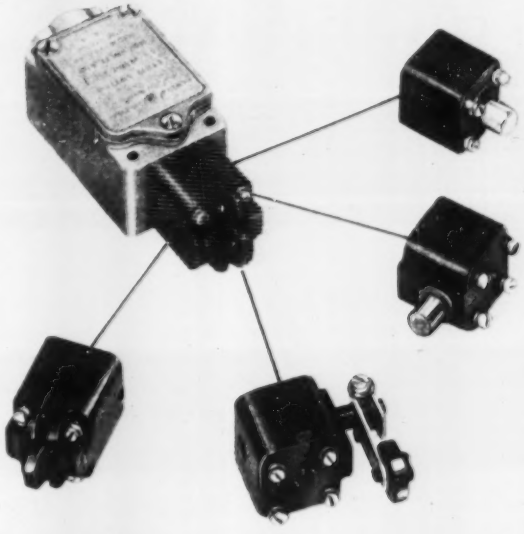
Available in air-break and oil-immersed designs, this hard-working starter for motors up to 250 hp utilizes the most modern materials and methods to give exactly the kind of operation you require for years to come.



NEW OILTIGHT POTENTIOMETER FOR CONTROL OF VARIABLE-SPEED MOTORS

This compact unit is part of the new G-E line of oiltight push buttons for use on a-c or d-c. It can be mounted in the standard G-E stations or enclosures or directly on the machine to be controlled. Ask for Bulletin GEA-5779 on the entire line of G-E oiltight push buttons.

SMALL G-E LIMIT SWITCH HAS FOUR INTERCHANGEABLE OPERATING HEADS FOR VARIETY OF APPLICATIONS



The basic contact unit—only slightly over two inches high—can be obtained with one of four different types of heads: roller lever, side pushrod, top pushrod, and roller pushrod. Case is oiltight—a gasketed cover keeps dirt and lubricating oils away from the contacts.

Little movement is required to operate it—18 degrees with a one-inch radius arm, 5/64 inch for the plunger type. Use this switch on machine tools, battery truck lift platforms, on small machines as a pilot device, and as a safety interlock on enclosing cases. Operates on a-c or d-c. Double-throw snap-action contact is easily accessible for wiring, and there is adequate room within the cast aluminum case for connecting to terminals, which are extra large. Bulletin GEA-5707.

NEW DUST-TIGHT/LINT-TIGHT G-E MANUAL MOTOR STARTER

For Motors Up to 7½ Hp

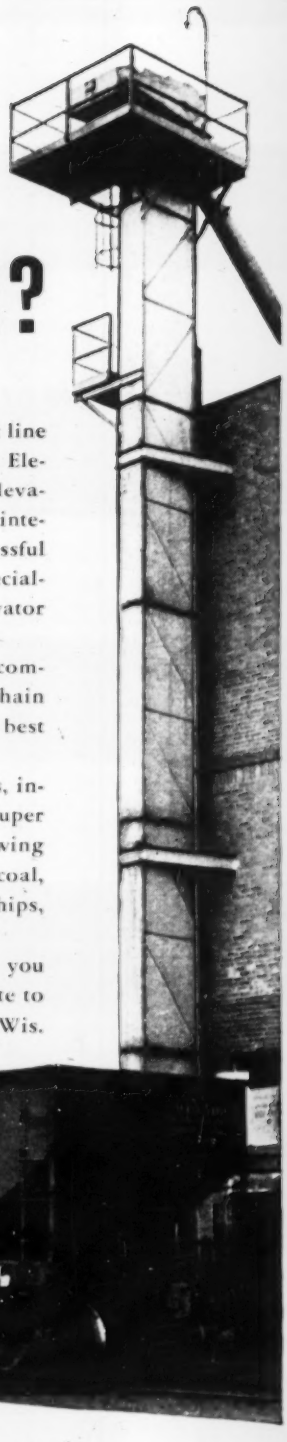
Listed by Underwriters' Laboratories and Factory Mutual, this starter for motors up to 7½ horsepower is completely dust tight. Special gaskets and cover fastenings keep dust from contacts—reduce the fire hazard. Two- three- and four-pole forms have bi-metallic overload relays with front-connected heaters. Switch lever moves to neutral position on overload, is vibration resistant.

Switch interior can be reversed in the enclosure for either top or bottom feed, and ON-OFF nameplate can be easily reversed.

For more information contact your nearest G-E representative, agent, or distributor, or write Section B730-45, General Electric Co., Schenectady 5, N. Y.

GENERAL ELECTRIC

looking for a BUCKET ELEVATOR?

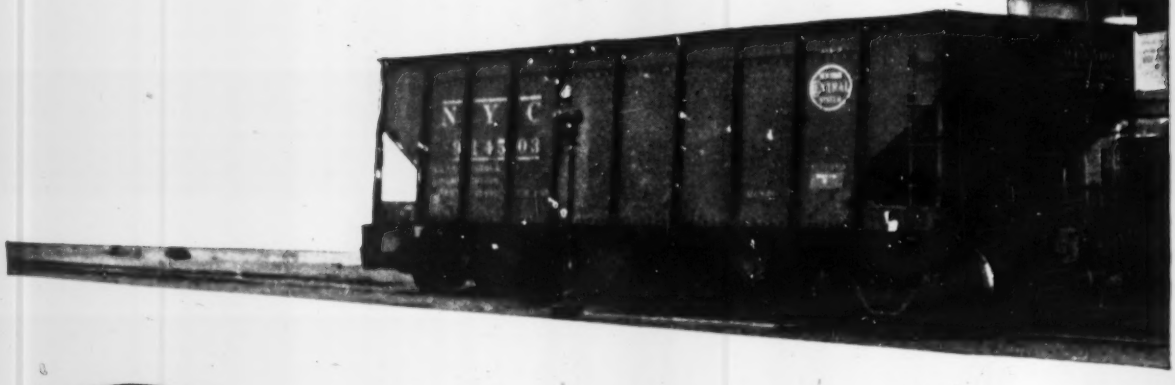


They're easy to find—when you make the complete Chain Belt line your starting point. Here, you'll find a standard Rex® Bucket Elevator to meet virtually every type of requirement. You'll find elevators that are dependable, long lived, that require very little maintenance. You'll find a design that has been proved by years of successful operation in almost every industry. And you'll find trained specialists—men who devote themselves exclusively to bucket elevator problems—ready, willing and able to help you all they can.

Remember, too, that in a Rex Bucket Elevator all the major components—buckets, chains, sprockets, housing—are made by Chain Belt Company . . . just one more reason why you're sure of the best when you specify Rex.

Rex Bucket Elevators are made in a wide variety of designs, including Centrifugal Discharge type, Continuous Bucket type, Super Capacity type. They can handle virtually every type of free flowing material. Here's a list of some of the most commonly handled: coal, cement, gravel, crushed limestone, salt, sand, sugar, wood chips, soda ash, pebble lime, foundry sand.

Your Rex Field Sales Engineer is well qualified to advise you about the best elevator for your needs. Call him today or write to Chain Belt Company, 4660 W. Greenfield Ave., Milwaukee 1, Wis.



CHAIN BELT REX COMPANY ®

Chain Belt COMPANY OF MILWAUKEE

Atlanta • Baltimore • Birmingham • Boston • Buffalo • Chicago • Cincinnati • Cleveland • Dallas
Denver • Detroit • El Paso • Houston • Indianapolis • Jacksonville • Kansas City • Los Angeles
Louisville • Midland, Texas • Milwaukee • Minneapolis • New York • Philadelphia • Pittsburgh
Portland, Ore. • Springfield, Mass. • St. Louis • Salt Lake City • San Francisco • Seattle • Tulsa • Worcester

Distributors located in principal cities in the United States and throughout the world
Export offices: Milwaukee and 19 Rector St., New York City

When Uniformity Is a Necessity—

Specify Strip Steel by

WEIRTON

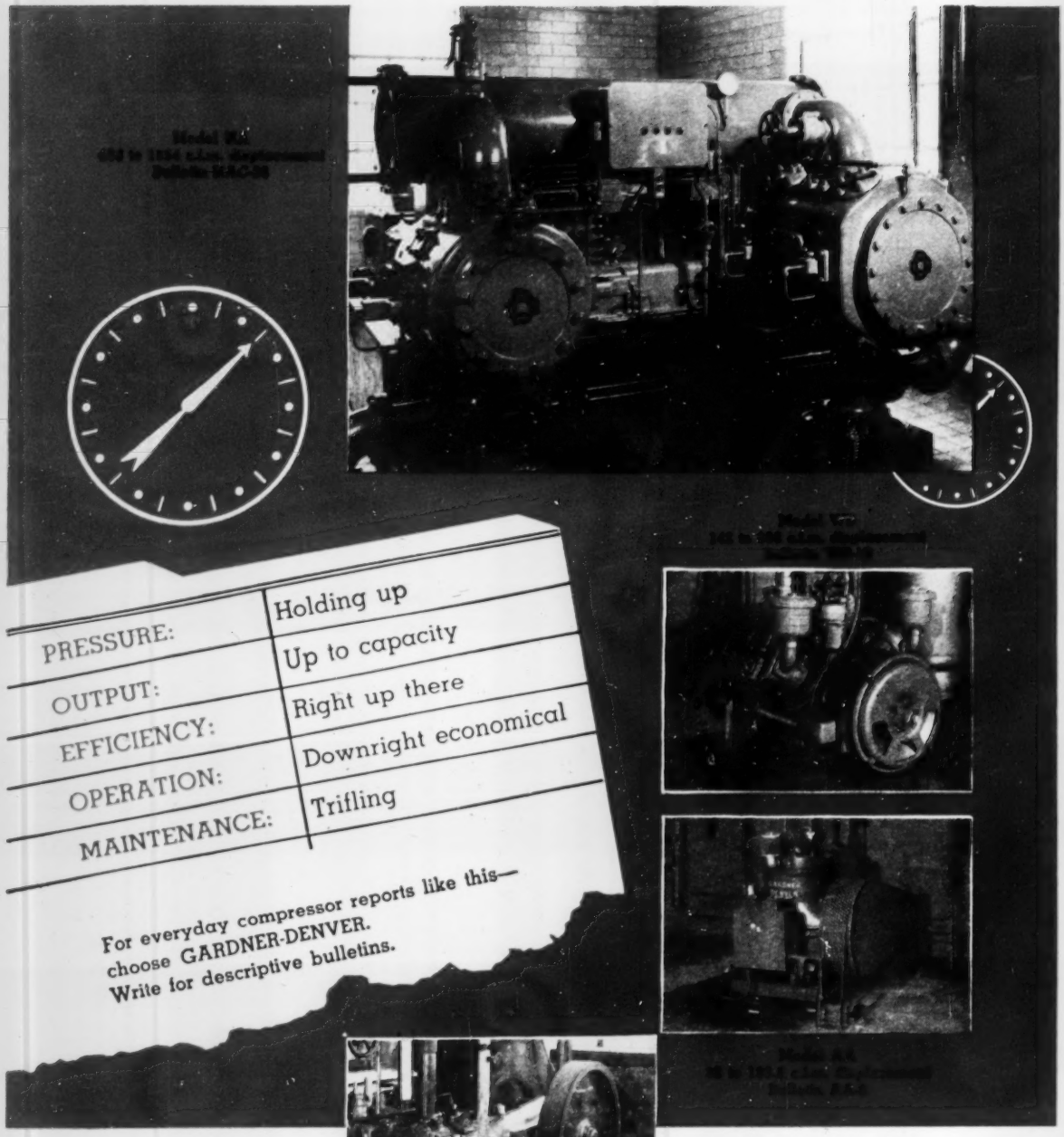
The rigid uniformity of Weirton quality is the result of superior equipment and complete control from mine to finished strip. Weirton's up-to-date manufacturing facilities and advanced mill procedures have made uniformity a routine matter. This uniformity of cold-rolled strip steel offers the advantages of faster production, minimum costs, and fewer rejects.

Weirton customers also enjoy the advantage of having strip steel made to satisfy their most exacting requirements. So when your plans call for cold-rolled strip steel—see Weirton and be sure.

WEIRTON STEEL COMPANY

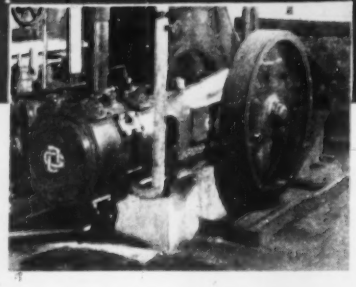
WEIRTON, WEST VIRGINIA

NATIONAL STEEL CORPORATION



PRESSURE:	Holding up
OUTPUT:	Up to capacity
EFFICIENCY:	Right up there
OPERATION:	Downright economical
MAINTENANCE:	Trifling

For everyday compressor reports like this—
choose GARDNER-DENVER.
Write for descriptive bulletins.



Model RX
89 to 1292 c.f.m. displacement
Bulletin HAC-40

GARDNER-DENVER SINCE 1859

Gardner-Denver Company, Quincy, Illinois
In Canada: Gardner-Denver Company (Canada), Ltd.,
14 Curity Avenue, Toronto 13, Ontario

THE QUALITY LEADER IN COMPRESSORS, PUMPS AND ROCK DRILLS

in WIRE ROPE, too, extra strength demands the RIGHT KIND of muscle

Towering as high as eight feet on his hind legs, the Kodiak or Alaskan Brown Bear ranks as the most powerful animal of North America. Rugged muscle development makes him the feared and deadly fighter that he is.

In wire rope, too, the right kind of muscle is essential to ward off the destructive effects of abrasion, corrosion, bending fatigue, load strain and shock stress.

That's why in Wickwire Rope we make sure—through complete quality control—that you always get the right construction and lay of the rope...the right grade of steel and size of wire for long-lasting resistance to the rigors of your particular service.

See your Wickwire Rope distributor or contact our nearest sales office.

THE COLORADO FUEL AND IRON CORPORATION—Abilene (Tex.) • Denver • Houston • Odessa (Tex.) • Phoenix • Salt Lake City • Tulsa
THE CALIFORNIA WIRE CLOTH CORPORATION—Los Angeles • Oakland • Portland • San Francisco • Seattle • Spokane
WICKWIRE SPENCER STEEL DIVISION—Boston • Buffalo • Chattanooga • Chicago • Detroit • Emlenton (Pa.) • New York • Philadelphia

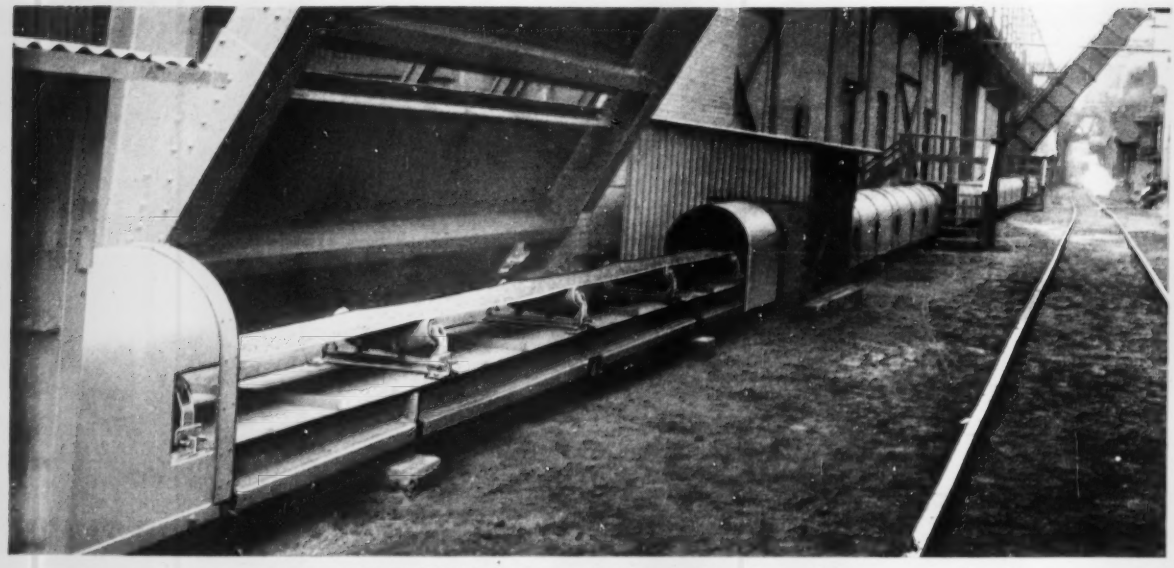
WICKWIRE ROPE
A CF&I PRODUCT

1222

A YELLOW TRIANGLE ON THE REEL IDENTIFIES WICKWIRE ROPE

CF&I

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION



This Link-Belt belt conveyor (with part of cover removed) easily handles coke breeze for blast furnaces at steel mill.

TOTAL ENGINEERING

It's LINK-BELT's answer for improved belt conveyor performance

BELT conveyor efficiency begins with correct analysis of overall system requirements. And right from the start Link-Belt offers you unique advantages. Our engineers can apply broad experience to your bulk handling problems.

Working with a complete line of quality components, they can select the belt conveyor equipment best suited to your exact needs. What's more, Link-Belt has a nation-wide engineering organization that will follow through on every detail. This includes supplying all related equipment . . . building supporting structures and enclosures . . . erecting the complete job, if desired.

It's easy to see why "total engineering" results in top belt conveyor performance. For complete information, call the Link-Belt office near you today.

13.330-E

LINK-BELT

BELT CONVEYOR EQUIPMENT

LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices in Principal Cities.

LINK-BELT builds a complete line of belt conveyor components

ALL TYPES OF ROLLER BEARING IDLERS

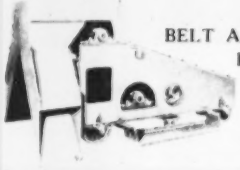
Impact-cushioning idler

45° troughed idler

Belt-training idler

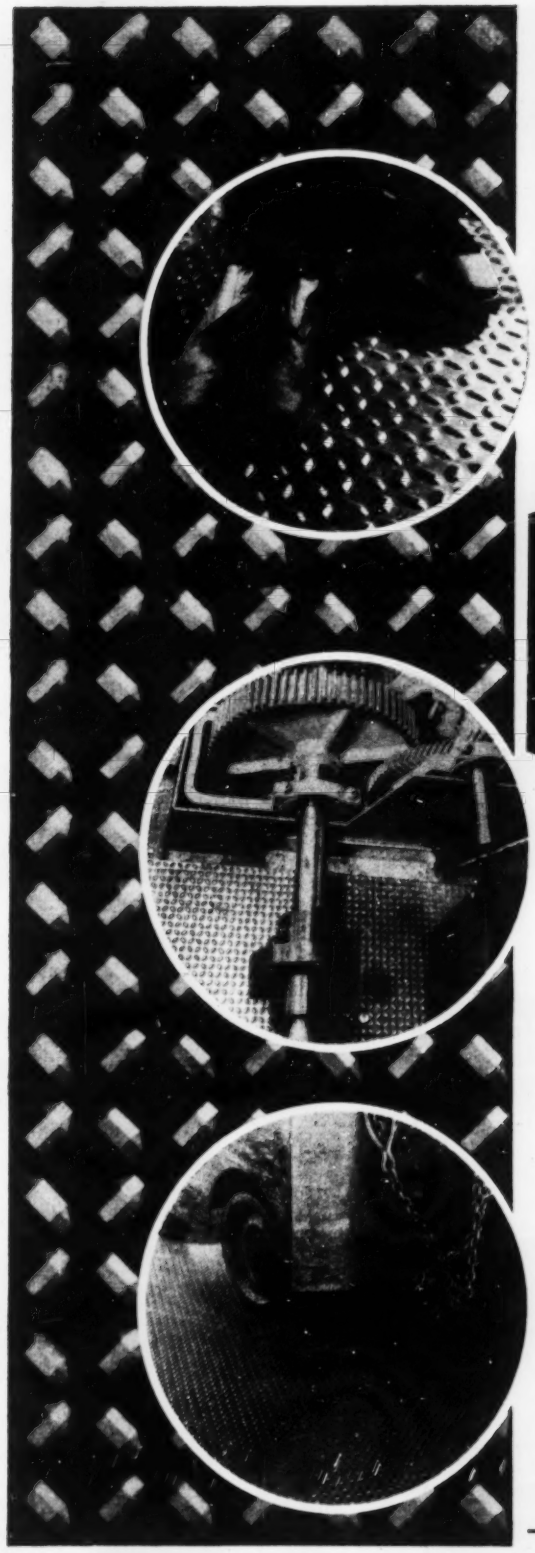
20° troughed idler

Return idler



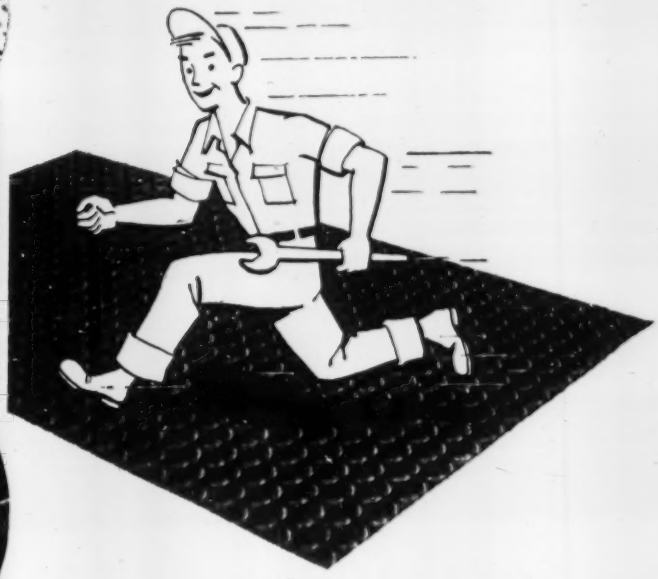
BELT AND MOTOR PROPELLED TRIPPERS

COMPLETE TERMINAL MACHINERY



There was a young worker named Printer
Who raced 'round the shop like a sprinter.
Now the flooring was slick,
When he tried to be quick
All he got for his pains was a splinter! . . .

Till the boss of the plant got a tip
About using non-skid Multigrip.
So he used quite a lot
On each danger spot . . .
And now Printer can rush . . . and not slip!



SAFETY UNDERFOOT. Multigrip Floor Plate is so designed that several skid-resisting risers always grip the foot, providing safe footing regardless of the direction from which the plate is approached. The flat-topped, lozenge-shaped risers are comfortable underfoot, too . . . tend to lessen accident-causing fatigue. And vehicles roll straight and true on Multigrip. There are no gutters to trap a vehicle wheel . . . wheels roll *on* the risers, not *between* them. For safety's sake, use Multigrip.

UNITED STATES STEEL CORPORATION, PITTSBURGH
COLUMBIA-GENEVA STEEL DIVISION, SAN FRANCISCO
TENNESSEE COAL & IRON DIVISION, FAIRFIELD, ALA.
UNITED STATES STEEL SUPPLY DIVISION, CHICAGO
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

U·S·S
multigrip
FLOOR PLATE

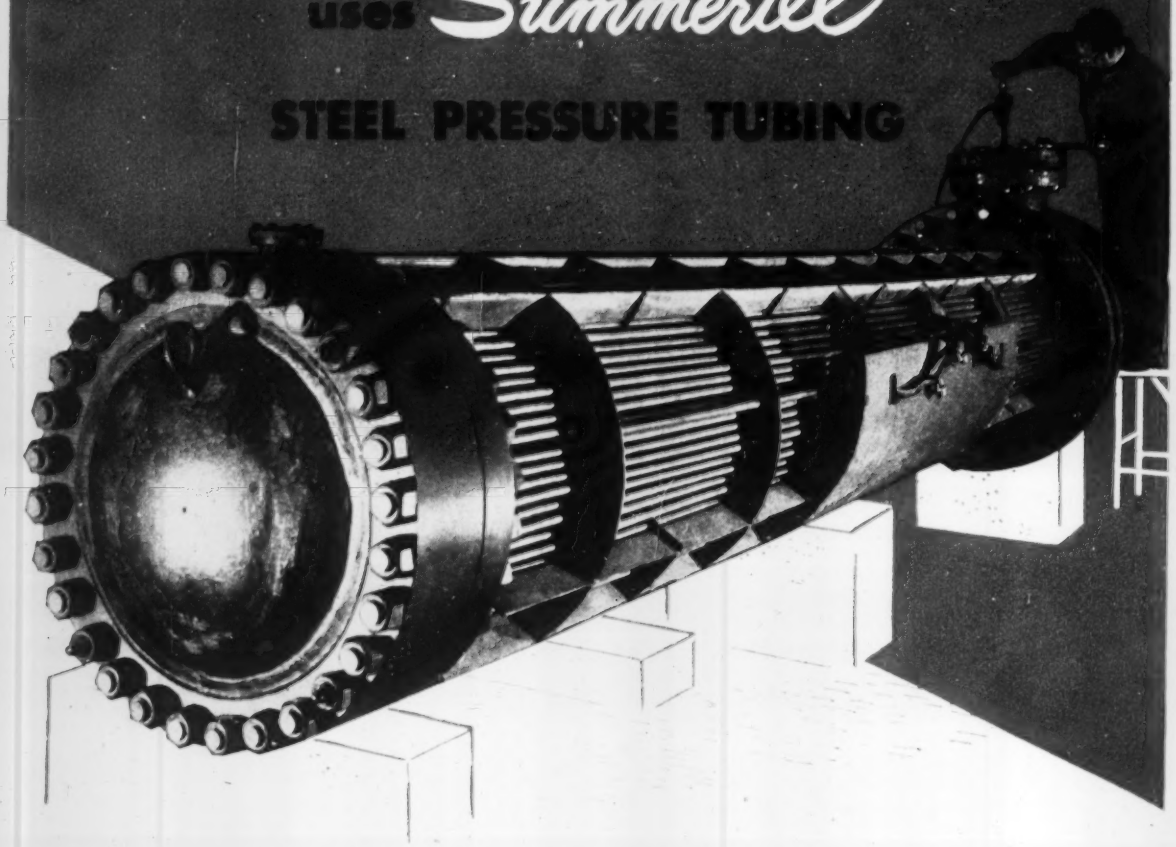
USS

Sold by leading distributors from coast to coast

3-494

UNITED STATES STEEL

Here's why The A. O. Smith Corp. uses Summerill STEEL PRESSURE TUBING



The A. O. Smith Corporation has found that Summerill Steel Pressure Tubing consistently meets their high quality tubing standards. For Summerill Seamless Tubing withstands internal pressures that would cause other tubing materials to quickly fail. It flares easily, and takes sharp bends in stride without flattening or developing an "orange peel" effect on the bend.

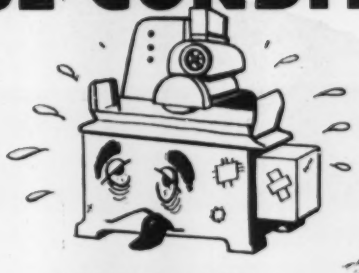
Summerill Pressure Tubing is Quality-Controlled from raw materials to finished product in one of the nation's most modern tubing plants. Only prime raw materials are used. As a result, you can depend on Summerill for top uniform quality of product—regardless of whether you buy a single length or by the carload. *And remember this:* Not one Summerill customer has ever received a "leaker", or reported a pressure tubing failure! Summerill Pressure Tubing is available in lengths up to 38 feet. ● For further details or technical assistance, call or write: *Summerill Tubing Company Division, Columbia Steel & Shafting Company, Pittsburgh 30, Penna.*

W&D 4600

IN COLD DRAWN SEAMLESS STEEL TUBING

SPECIFY Summerill AND BE SURE!

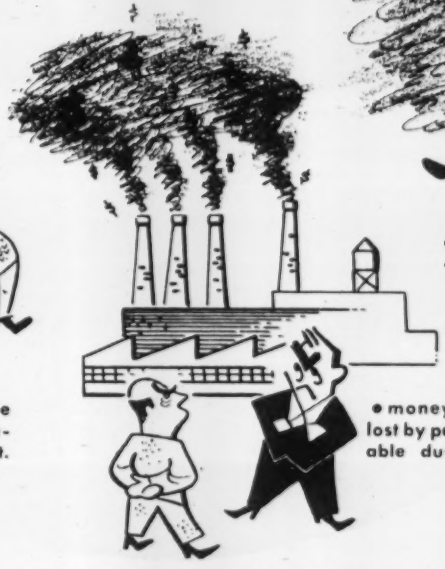
IF YOU CAN "LAUGH-OFF" THESE CONDITIONS . . .



• precision machines with that "worn out" feeling from abrasive dust.

• fines and poor public relations as a result of flouting air polution laws.

• costly, inefficient production due to unhealthy or hazardous conditions.



• sky-high maintenance and cleaning costs because of uncontrolled dust.

• money and profits lost by permitting valuable dust to escape.

. . . if these conditions don't faze you—then you don't need dust control!

BUT—if your plant can't stand these costly inefficiencies—(and we're sure it can't)—then dust control is a *must*.

Dracco Dust Control Systems are industry's finest—because of Dracco's custom design and application engineering. For over 35 years, American industry has relied on Dracco to solve tough, unusual dust preblems.

You can profit from our vast storehouse of practical dust control experience. Call or write today.

DRACCO CORPORATION
4090 East 116th Street • Cleveland 5, Ohio

DRACCO *Performance Proved*

Airstream CONVEYORS • DUST CONTROL EQUIPMENT

DRAVO

DESIGNERS *and* BUILDERS

BRIDGES AND UNLOADERS • TOWER-TYPE UNLOADERS
WHIRLER CRANES • FLOATING CRANES
DRAVO RAIL CLAMPS • BARGE SHIFTERS
MODERNIZED TROLLEYS FOR EXISTING BRIDGES

This new rope-operated coal unloader was designed, built and installed by Dravo for a large power generating plant on the Monongahela River.

The unloader is equipped with a seven-and-one-half-ton bucket and has a free-digging capacity of 800 tons per hour for unloading coal from river barges.

Many power companies and industrial plants have called on Dravo Corporation for similar installations. Why not make use of Dravo's more than 60 years of practical experience when planning a material-handling project?

DRAVO
CORPORATION

NEVILLE ISLAND, PITTSBURGH 25, PENNSYLVANIA

AIR CONDITIONING • BOILER AND POWER PLANTS • CRANE CAB COOLERS • DOCKS • INDUSTRIAL FOUNDATIONS • OPEN STEEL FLOORING
PUMP HOUSES AND INTAKES • SPACE HEATERS • WATER AND WASTE TREATMENT PLANTS • TOWBOATS AND BARGES

THE HANSEN REPRESENTATIVE—

Quick-Connective Couplings Are His Business

BUT SO ARE AIR LINE PROBLEMS

REPRESENTATIVES

BALTIMORE	LOS ANGELES
BIRMINGHAM	LOUISVILLE
CHICAGO	MILWAUKEE
CLEVELAND	MINNEAPOLIS
DALLAS	NEW ORLEANS
DAYTON	PITTSBURGH
DENVER	ROCHESTER
DETROIT	SAN FRANCISCO
FT. WAYNE	SAVANNAH
HARTFORD	SEATTLE
KANSAS CITY	ST. LOUIS

MONTREAL
TORONTO VANCOUVER

Export Department: CLEVELAND

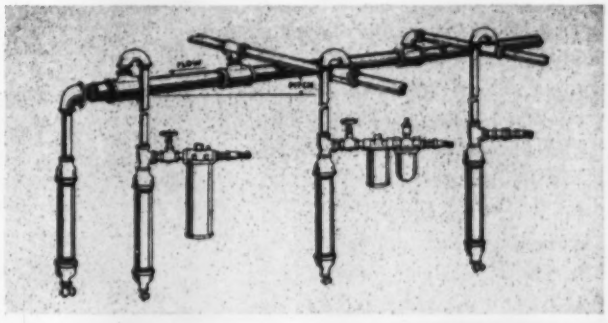
TO AVOID AIR LINE PROBLEMS

use the HANSEN man's know-how

...backed by experience in hundreds of plants!

Believe us, you're missing something if you aren't making use of the know-how and help that you can get from the Hansen representative. In dozens of plants, it's almost routine procedure to call him—either when actual troubles arise—or when air line circuits are being planned or altered.

The main job of the Hansen representative, of course, is to supply you with exactly the right couplings for your particular requirements. But from years of on-the-job experience with almost every type of fluid line installation, he can also give you real help on such matters as the pitch of your lines, proper take-off, location of drains and other details which insure a moisture-free circuit operating at maximum efficiency.



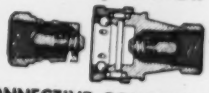
To keep moisture out of air operated devices—
ASK THE HANSEN REPRESENTATIVE ABOUT THE HANSEN HOOK-UP

QUICK-CONNECTIVE FLUID LINE COUPLINGS

1. QUICK CONNECTION AND DISCONNECTION **2. INSTANT AUTOMATIC FLOW OR SHUT-OFF**

One-Way Shut-Off

Two-Way Shut-Off



ALSO STRAIGHT-THROUGH QUICK-CONNECTIVE COUPLINGS

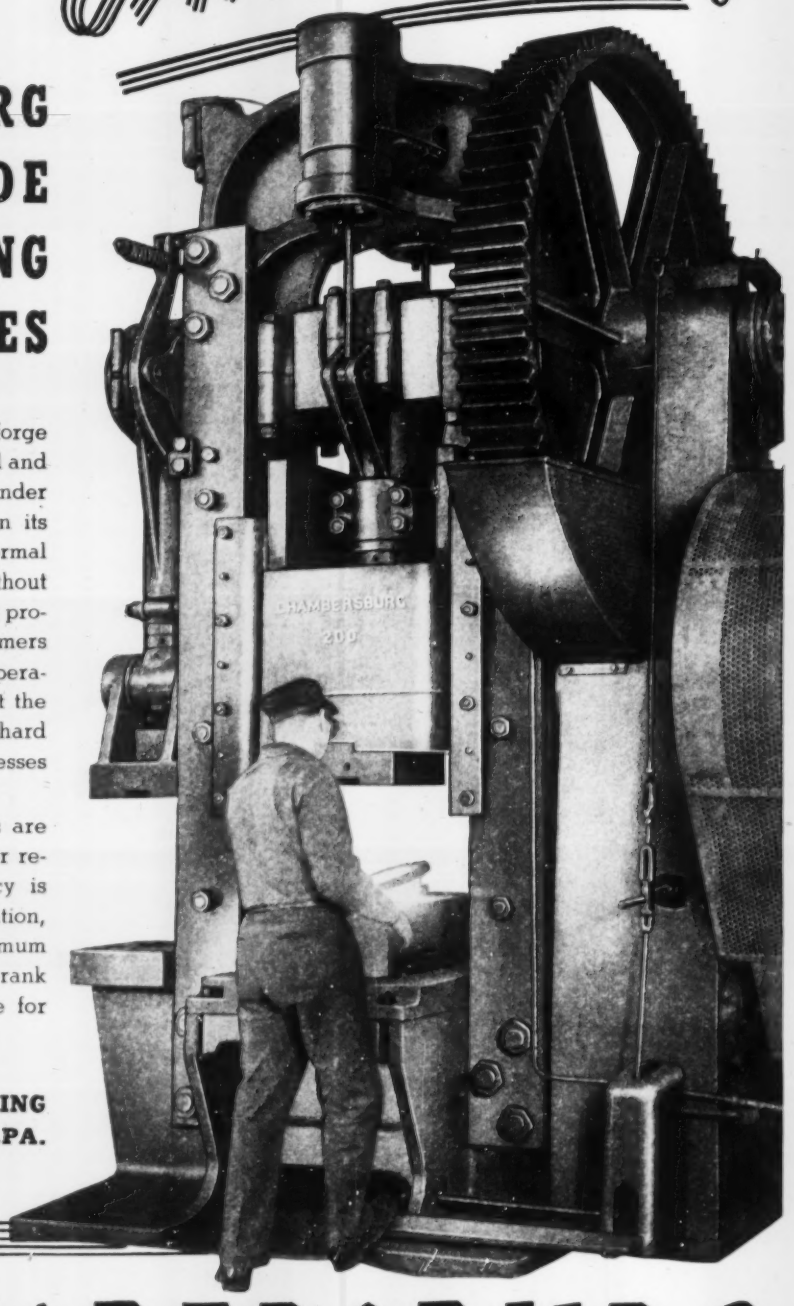
Send for Catalog!

THE HANSEN MANUFACTURING COMPANY

4031 WEST 150th STREET • CLEVELAND 11, OHIO

BUILT TO BE JAM-PROOF!

CHAMBERSBURG STEEL SIDE TRIMMING PRESSES



Trimming presses designed for forge shop use. Used to trim, punch, bend and size. Each press, thoroughly tested under overload conditions, must maintain its alignment when stalled from normal speed, and function perfectly without adjustment after the test. When the production of your line of forging hammers is dependent upon the continuous operation of the trimmer—you will want the one that can stand day after day of hard usage. Chambersburg Trimming Presses are practically indestructible.

Chambersburg Trimming Presses are easily accessible front and back for removal of stock. Greater efficiency is possible through continuous operation, low power consumption and minimum floor space. Single and double crank types. Wide range of sizes. Write for Bulletin 3-L-9.

CHAMBERSBURG ENGINEERING COMPANY, CHAMBERSBURG, PA.

Builders of **THE IMPACTER**

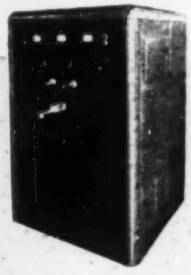
"FORGING IN MID-AIR"

CHAMBERSBURG

THE HAMMER BUILDERS

PYLE NATIONAL INCREASES PRODUCTION 47%!

Soldering Of Spring Assemblies Speeded By *LINDBERG* Induction Heating Unit



An hourly production increase of 47% . . and a per-operator production increase of 330% through the use of a Lindberg Induction Heating Unit! These are the money saving facts and figures reported by Pyle National Co., Chicago manufacturer of electrical components.

The company uses a 10 KW Lindberg unit for the production soldering of flanges to coil springs in the manufacture of torsion spring assemblies. The time cycle is 11 seconds for each assembly.

Production has been increased to 125 assemblies an hour . . with one girl operating the equipment. This is an hourly increase of 40 assemblies over the former method where soldering was done by a team of three men using gas torches. And the hourly per-operator production is up from 28 to 125!

With the induction heating unit, there are no open flames from gas torches. No extra exhaust fans are required . . there is little danger of burns to operators . . fire hazards are virtually eliminated!

And there is a substantial economy of floor space! Formerly the three torch operators required more than 60 square feet of floor space . . but the Lindberg Induction Heating Unit requires less than 30 square feet.

If your requirements call for production soldering, brazing, hardening, annealing, stress relieving, hot forming, forging or shrink fitting, investigate Lindberg Induction Heating Units. Ask for Bulletin 1440.

These parts . .
plus this ring of soft solder . .
go through the
Lindberg Induction Heating Unit
to make this
torsion spring assembly . .

LINDBERG

HIGH FREQUENCY DIVISION

LINDBERG ENGINEERING COMPANY,
2441 West Hubbard Street, Chicago 12, Illinois

HOW TEXACO REDUCES UNIT COSTS FOR STEEL MILLS

Proper maintenance of steel mill machinery means a boost in production, and savings that are reflected in a lower per-ton cost for the fabricated metal. And one of the most vital factors in proper maintenance is effective lubrication. This, to steel men everywhere, means Texaco.

There are Texaco Lubricants for every steel mill job. *Texaco Meropa Lubricant*, for example, with special Extreme Pressure properties to protect enclosed reduction gears. *Texaco Regal Oil* to guard oil film bearings on roll stands.

Along with these fine lubricants goes Texaco Lubrication Engineering Service. The men who render it are specially trained and widely experienced . . . skilled in diagnosing trouble and adept in overcoming it. Their service to you goes far beyond mere lubricant recommendations.

Let a Texaco Lubrication Engineer survey your mill and help you bring down costs. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write:

The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Lubricants, Fuels and Lubrication Engineering Service

TUNE IN: Tuesday nights on television the TEXACO STAR THEATER starring MILTON BERLE. See newspaper for time and station.

The Metalworking Outlook

April 20, 1953

Steelworkers Eye Social Benefits

Steelworkers are talking about demanding wider social insurance benefits in 1954. Technically, their contract negotiations this year can relate to wages only, but such a restriction has rarely stopped a union from trying to include other subjects on the agenda. If the steelworkers get nowhere on wages when talks reopen next month, watch them aim for some social insurance concessions.

Wildcat Strikes Increase

The wildcat strike season is in full swing. The uncertain economic weather which that means for scattered companies will probably improve in early summer when the peak of spring contract openings is past. Quickie walkouts usually flourish just before or during legitimate negotiations. Ford and Chrysler last week were still in the process of recovering from small strikes that had big effects. Not all unions tacitly condone wildcatters. United Steelworkers of America's Local 1331 in Youngstown, for example, offered Republic Steel Corp., which has been harassed by quickies, a "no strike" pledge.

Compromise on Tax Cuts

A compromise is in the making to let the Reed income tax reduction bill pass. President Eisenhower now says the proposed 10 per cent cut in personal taxes will be o.k. with him if a balanced budget is "in sight" rather than actually achieved. Even the prospects of eventual budget balance won't be known clearly until mid-May when a decision on defense spending is expected.

Year's Status Quo on Tariffs

President Eisenhower's request to keep the status quo on our present tariff arrangements for one year pending a study of the situation will get congressional approval. Judging from some of his recent appointments, you can reason that the Chief Executive favors protective barriers, especially for some of our extractive operations such as lead and zinc. Joseph Talbott, recently appointed and confirmed for the six-man Tariff Commission, favors protection, as does Felix E. Wormser, former vice president of St. Joseph Lead Co., who just got Senate approval as assistant secretary of the interior.

More Copper Ore by 1954

The full effects of expansion in domestic copper mining won't be felt by copper consumers until 1954 (p. 67). Anaconda Copper Mining Co.'s Greater Butte project in Montana (ultimate capacity: 45,000 tons yearly) came in last year, but its Yerington, Nev., open-pit operations won't turn out concentrates until the close of 1953 and can't produce at a rate of 30,000 tons yearly until 1954. Miami Copper Co.'s Copper Cities, Ariz., unit (20,000 tons) will be operating by late 1954. Phelps Dodge Corp.'s Lavendar Pit operation in Arizona

Production Engineering News—p. 109 The Market Outlook—p. 179

(38,000 tons) will open in late 1954. Other mines opening next year will add about 87,000 tons of ore annually to our capacity.

Discovery: Nickel in Cuba

What's believed to be the second largest nickel deposit in the world has been reported discovered by Freeport Sulphur Co. in the Moa Bay area of Cuba. The company plans to get started producing by 1955, with initial annual production of 15,000 tons. A pilot plant will be built to recover both nickel and cobalt. Nicaro Nickel Co., a Freeport subsidiary, operated the government-owned Cuba plant during World War II.

Fresh Milk—in Cans

Fresh milk marketed in cans could become a big business. Can producers are studying the possibilities now. Some fresh milk is already being canned for commercial purposes in California and the Pacific Northwest. And in Wisconsin six-ounce cans of fresh milk are being turned out for vending machines in the New York City area.

Color TV by Late 1954?

The first color home television receivers probably won't hit the market until late-1954. Radio Corp. of America says that before it's ready to sell color sets it would require 9 to 12 months after the Federal Communications Commission approves a color system, which it hasn't done yet.

Straws in the Wind

A record 684,900 worked for the steel industry in February, earning $261.3 million . . . U.S. investments in Canada rose from $78 million in 1948 to $299 million in 1951 and now equal our total investments in all Latin America . . . Canada is ready to invite private industry to join in atomic power developments if the U.S. and Britain release enough secret technical data . . . Armco Steel Corp. plans to spend an additional $5 million at its Middletown, O., division to round out facilities . . . The new Republic Steel Kitchens line, first ore-to-store operation in the steel kitchen industry, is about ready for consumer reaction.

What Industry Is Doing

The shortage in copper is ended and a buyers' market is shaping up (p. 67) . . . America's economy is now healthy enough to thrive on a purely peacetime basis, says Walter Williams, under secretary of commerce (p. 69) . . . Industry may be forced in 30 years to obtain most of its iron ore from foreign sources and domestic concentrates (p. 70) . . . Erectors of industrial machinery expect their business to continue rising throughout 1953 (p. 71) . . . The Atomic Industrial Forum Inc. is established to help private industry be heard on atomic usage at government levels (p. 72) . . . Machine tool builders are sighting civilian targets as new orders fall off (p. 72) . . . Sales of mill supplies and industrial equipment so far this year are ahead of the same period in 1952 (p. 74) . . . Greater requirements in lubricants are demanded by jet turbines and other new heat-resistant products (p. 74) . . . Urgently needed: More foreman training programs (p. 79).

Westinghouse-Sturtevant fans are used in this special Environmental Test Chamber that duplicates air conditions from sea level to 20 miles up for testing RCA electronic equipment.

HOW DO ELECTRONIC DEVICES BEHAVE 70,000 FEET UP?

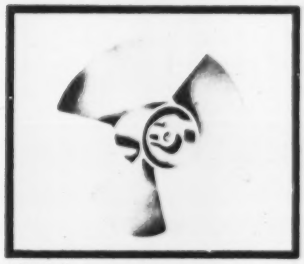
Lives depend on the answers found in this atmospheric testing chamber in type-test laboratories of RCA's Engineering Products Department. But the answers aren't easy to get. For the big problem is to duplicate as accurately as possible the thin, cold air of high altitudes.

The solution? Powerful Westinghouse-Sturtevant Axiflo Fans constantly circulate chilled air, force temperatures down as low as -85°F. Working against a partial vacuum, created to simulate low pressures encountered in the upper regions of the stratosphere, these fans keep temperatures uniform to within several degrees by providing a homogeneous mixture of air throughout the chamber.

No matter how you want to *put air to work*—whether air handling, air conditioning or air cleaning—Westinghouse offers you a complete line of industry-proven equipment to fill your needs. For complete details, call your local Westinghouse-Sturtevant office. When you do, also ask for new General Catalog 600—a 60-page reference file for Putting Air To Work. Westinghouse Electric Corp., Sturtevant Division, Hyde Park, Boston 36, Mass.

Test Chamber designed and installed by Tenney Engineering, Inc., Newark, N. J.

Axiflo Pressure Fans find wide use throughout industry because of adaptability to duct systems and for discharge against high winds.



3 Bladed Aluminum wheel is non sparking, corrosion resisting, handles large volumes.

8 Bladed Steel Wheel is non-overloading, quiet and stable, ideal for high temperatures.

YOU CAN BE SURE... IF IT'S Westinghouse

J-80267

AIR HANDLING

Special Zinc-Coated Steel Takes Deep Draws

This series of draws is typical of what you can do with Armco ZINCGRIP—a special zinc-coated steel. There's not a flake, not a break in the zinc coating. It stretches and flows with the base metal to provide continuous rust protection after drawing. This is because the specially applied coating takes as severe a draw as the steel base.

It stays rust-free longer

The special hot-dip coating on Armco ZINCGRIP gives protection against yellow rusting in atmospheric service longer than equal weight coatings on regular galvanized sheets. Many actual field tests have proved this.

A paint-holding sheet

The same deep-drawing zinc-coated sheet supplied with a mill-applied Bonderized finish is known as Armco ZINCGRIP PAINTGRIP. It has all the deep-drawing and forming qualities of ZINCGRIP—plus a finish that takes paint immediately and preserves it longer.

let ZINCGRIP save you money

If you have hesitated to use pre-coated steel because your product requires severe forming or drawing, find out more about Armco ZINCGRIP and ZINCGRIP PAINTGRIP. Both products are supplied in cut lengths or coils, in 11 through 28 gage and up to 54 inches wide depending on gage. Supplied in regular commercial weight coating or up to 2.00 oz. per square foot.

• • •

Write for our booklet, "Armco ZINCGRIP and ZINCGRIP PAINTGRIP" for complete information.

ARMCO STEEL CORPORATION

2853 Curtis Street, Middletown, Ohio
Export: The Armco International Corporation

ARMCO

A Clear Mandate

Investigators who have been seeking information regarding certain operations of the federal government have been appalled by the inaccuracy and inadequacy of departmental records. They also have been shocked at the fantastic lengths to which red tape has been employed to complicate what could be relatively simple activities.

Illustrative of the latter is the testimony of Assistant Secretary of Defense Wilfred J. McNeil in the hearings on the shortage of ammunition in Korea. He said that a single ammunition contract has to be routed through 42 divisions and 200 operations before the contractor can begin production. Former Defense Secretary Robert A. Lovett testified that "the Army, specifically the Ordnance Corps, is so complicated, obsolete and timewasting and its accounting system so inaccurate that it is extremely difficult to obtain the facts." He also pointed out that certain ordnance officers claimed that there was a shortage of money to speed up ammunition production, when actually the Army had $2 billion in unobligated funds for this purpose.

Apparently the employment figures of the government are as cockeyed as its information on ammunition. The Defense Department, which has been reporting about 1.25 million employees, now finds it has 250,000 previously unreported civilian employees overseas. Civil Service authorities estimate the number of persons on the federal payroll at 2.5 million, but they qualify this estimate by stating that some reports are so inaccurate or inadequate as to be misleading. Postmaster General Arthur E. Summerfield says post office employment statistics are so inaccurate as to be valueless. Democratic Senator Harry Byrd reports that a joint committee of which he is chairman was forced to abandon its monthly report on the number of federal employees because it is impossible to obtain accurate information.

This testimony confirms the belief of many citizens that the mess in Washington is worse than has been realized. It shouts to high heaven that federal bureaucracy and red tape have outgrown the ability of Congress to control them.

Certainly these disclosures constitute a clear mandate to the Eisenhower administration to intensify its pledged effort to trim the federal government to controllable size.

E. C. Shaner

EDITOR-IN-CHIEF

NET PROFIT TOO LOW: Two points stand out in this publication's 28th annual financial analysis of the steel industry, which appears in an insert following page 74. First, the steel producers' net profit of only 4.91 cents per dollar of sales is dangerously low. Secondly, the United States Treasury took a terrific beating from last year's steel strike.

Of course profit in relation to sales in 1952 was somewhat lower than it would have been

had there been no strike. However, even in 1951—a year of high production—the average profit of steel companies was only 5.71 cents per dollar of sales. In periods of near-capacity operations, steel producers should make enough money to compensate owners fairly and have something left over to put back into the business for the inevitable rainy day. Returns of 4.91 and 5.71 cents per dollar in two consecutive years are inadequate for this purpose.

That Uncle Sam suffered a loss of a billion dollars in taxes because of last year's steel strike simply reaffirms the fact that the American taxpayer paid heavily for Mr. Truman's folly in precipitating that needless work stoppage.

FANTASTIC TAX LOAD: According to its annual report for 1952, General Motors Corp. earned a profit of $559 million on sales totaling $7,549 million, or 7.4 per cent. Of the sales revenue, $1,107 million, or about 15 per cent went for federal, foreign, state and local taxes. In addition to these taxes, General Motors collected $472 million in sales and excise taxes, so that ascertainable taxes amounted to $1,579 million. This is equivalent to $18.09 per share of common stock and it is more than 4½ times the amount paid in dividends on the common stock.

Figures like these illustrate how necessary it is to trim our federal government to reasonable size and to reduce the tax load to bearable proportions.

STRENGTH VS. DANGER: At the spring meeting of the National Machine Tool Builders Association two weeks ago and at the Westinghouse Machine Tool Electrification Forum last week (p. 72) numerous speakers placed strong emphasis upon the importance of cutting costs and upon the opportunities open to machine tool builders to help industry to achieve this objective.

Tell Berna, general manager of NMTBA, describes the problem and its solution in two brief sentences: "The great danger to our country is obsolescence; our greatest strength is productivity. It is the job of machine tool builders to lessen that danger and increase that strength."

Now that machine tool salesmen again are free to devote more of their attention to civilian markets, one of their best sales arguments is to demonstrate to prospective buyers that obsolete equipment means lost production and unnecessarily high costs.

ORE SOURCES IN 1980: In an address to the National Federation of Financial Analysts Societies, H. S. Harrison, financial vice president of Cleveland-Cliffs Iron Co., forecast (p. 70) where the iron ore required for the American iron and steel industry will come from in future decades.

He predicts that in 1980 shipments for United States consumption of 157 million long tons will consist of 35 million tons from the Lake Superior district, 25 million tons from other domestic sources, and 57 million tons from foreign mines. These supplies of high grade ores will be augmented by 40 million tons of concentrates obtained by beneficiation of low-grade domestic ores. Thus in 1980, about 38 per cent of the nation's needs will be supplied by domestic high grade ores and 62 per cent by high grade imported ores and domestic concentrates. This is a drastic shift from the 10 per cent now received from these last mentioned sources.

100 MILLION FASTENERS: We are indebted to the current issue of "Fasteners," published by the Industrial Fasteners Institute, for some interesting statistics on household appliances and the number of screws, bolts, Speed Nuts, Sems, washers, etc. required to hold their parts together.

According to an article in "Fasteners," "there are in American homes today some 35.5 million refrigerators, 30 million washing machines, 23.6 million vacuum cleaners. There are also 36 million irons, 99 million radios (including auto radios), 20 million TV sets, 29 million toasters, and about 166 million other electrical appliances ranging from air conditioners to electric clocks. All in all, these appliances—and the comfort of the American home—are kept intact by something like 100 billion (it looks like this: 100,000,000,000) fasteners."

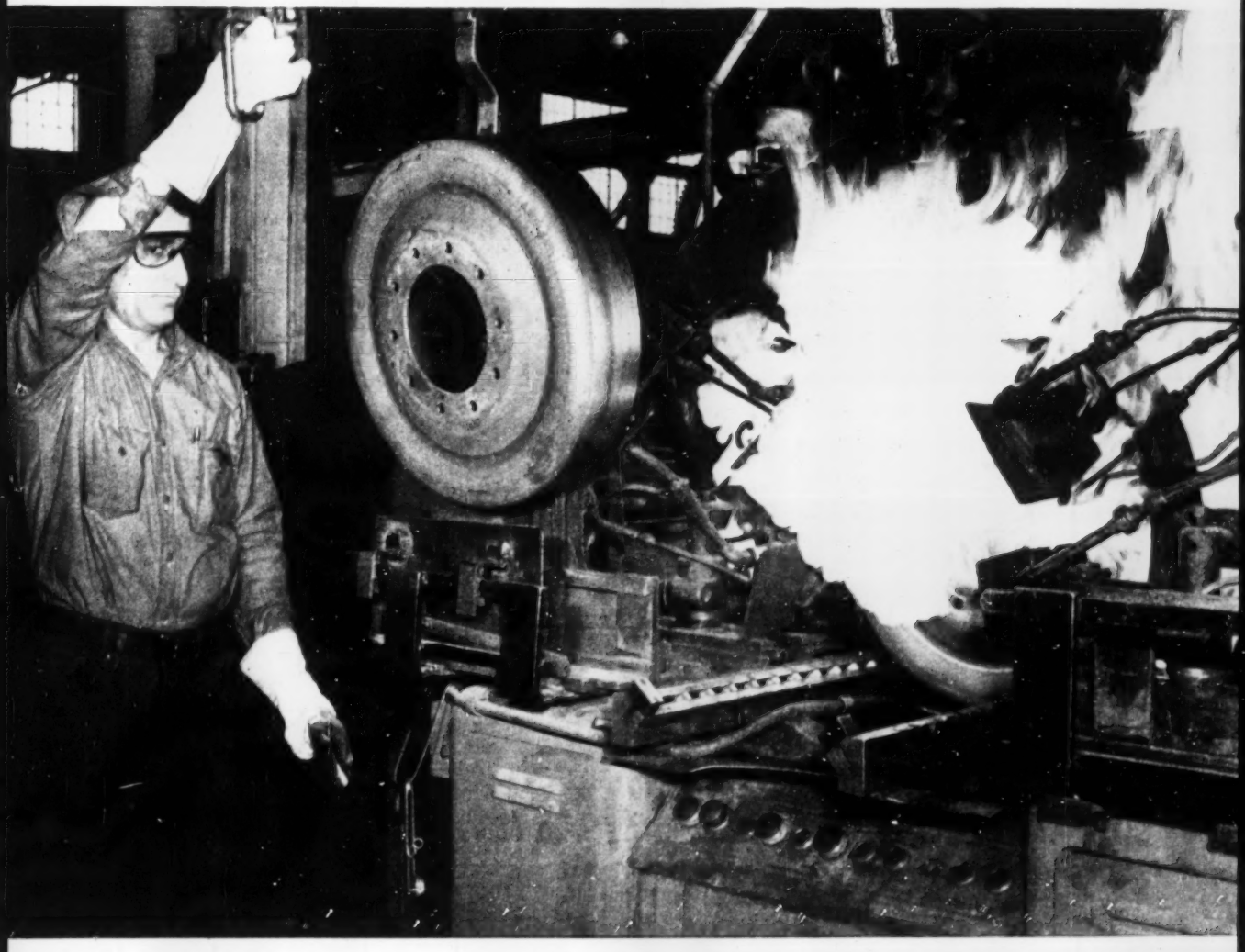
This is a dramatic way of emphasizing the importance of the role of fasteners in the things we use in everyday life.

AT Firestone STEEL PRODUCTS CO.

All Metal Stamping Operations are Integrated . . .

This Saves You Money

and Assures On-Schedule Delivery

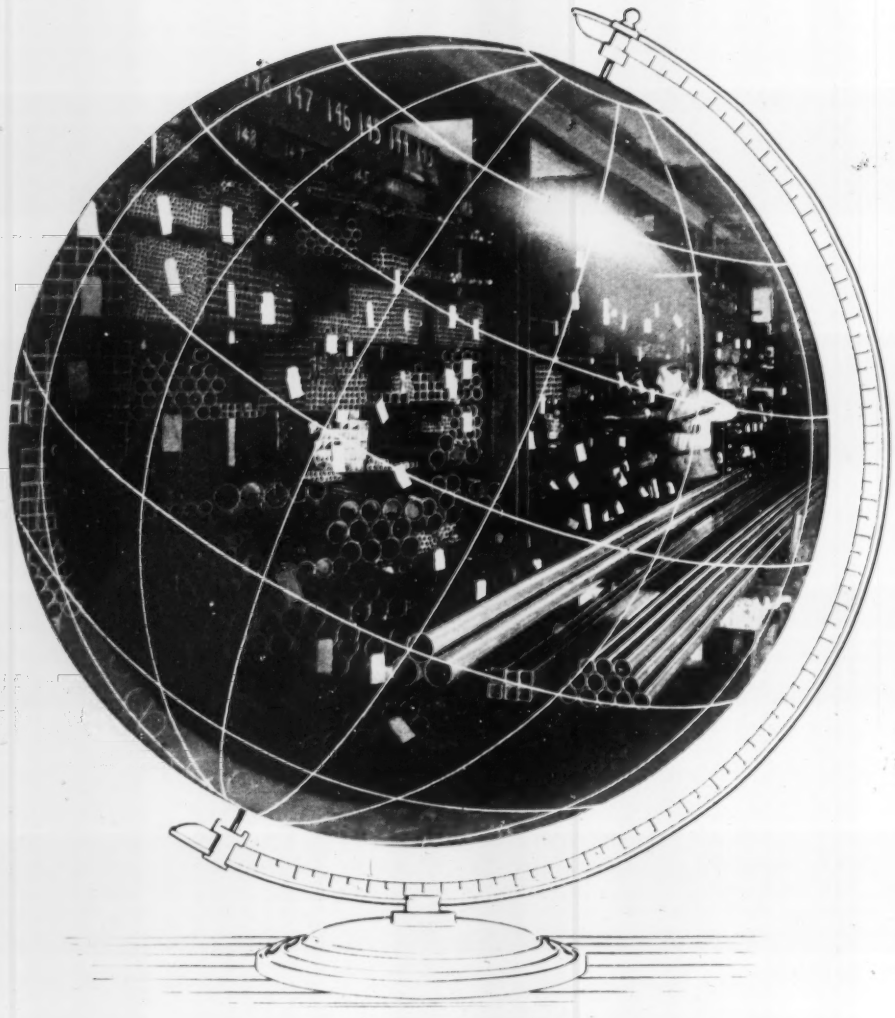


A sudden flash of fire — and this specially designed heat-treating equipment provides for proper hardening of steel for a specific use. This operation, which assures high-speed, accurately controlled and uniform results, is part of the straight-line, low-cost production of large steel stampings at Firestone.

Your job never leaves the plant at Firestone Steel Products until it's loaded for delivery — no matter how many operations are required. Stampings move without interruption from the large multiple-die presses on through welding, heat-treating, bonderizing, painting and baking, as required. Precious time is saved — tight production schedules roll through as planned. Your job comes through faster and cheaper.

It will pay you to figure with Firestone. A complete cost analysis will be gladly prepared for you — just write to Metal Stampings Division, Firestone Steel Products Company, Akron 1, Ohio.

Copyright 1955, Firestone Steel Products Co.



Call Ryerson for Welded Tubing

WORLD'S LARGEST STOCKS

Need tubing? Whether it's one tube or a carload, you'll save time by calling your nearby Ryerson plant.

That's because Ryerson stocks of welded mechanical tubing are the world's largest, including hot and cold rolled, round and square tubes in a wide range of sizes and wall thicknesses. And each Ryerson plant—there are fifteen, from coast to coast—is set up to process your order quickly; prepare the steel to your specification and make dependable delivery.

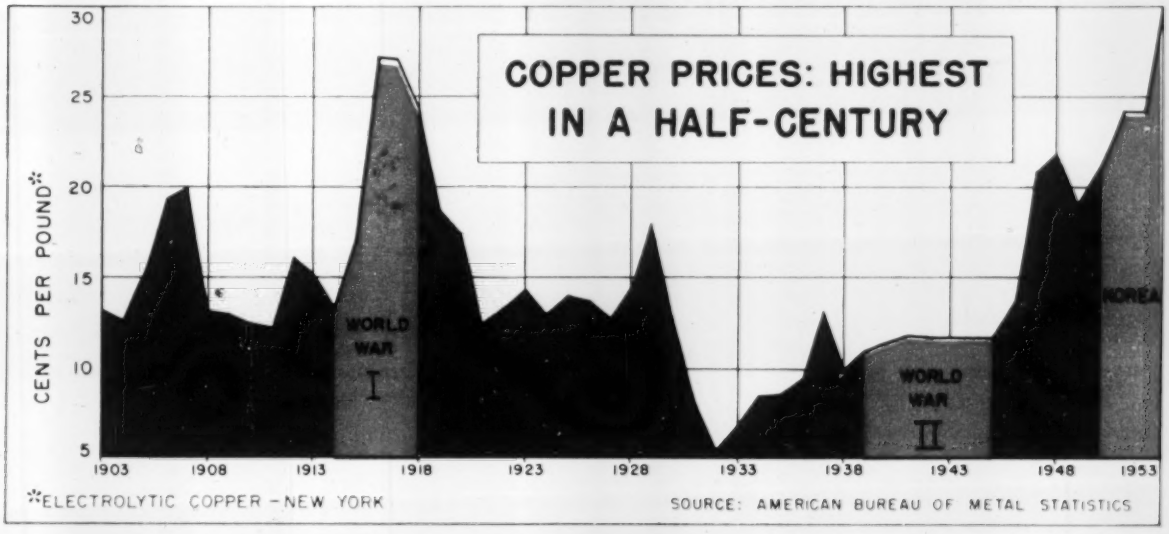
You can depend on the quality of Ryerson welded tubing, too. Even the hot rolled has a bright finish that's particularly good for painting. Both hot and cold rolled are produced to close tolerances. On both, the welding flash has been removed.

And remember, you can also draw on Ryerson stocks for other tubing requirements and for every other steel need. So save time—call Ryerson and combine your purchases. You'll get prompt, personal attention and quick action.

PRINCIPAL PRODUCTS: CARBON, ALLOY & STAINLESS STEELS—BARS, STRUCTURALS, PLATES, SHEETS, TUBING, MACHINERY & TOOLS, ETC.

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETROIT
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE



No Stopper from Copper as Shortage Ends

By SAMUEL W. BAKER
Associate Editor

THE COPPER shortage has ended.

For two years the red plague to production schedules, copper promises to be in comfortable supply from here on in and at more reasonable prices. A buyers' market is shaping up today, and the price trend is definitely downward. Even NPA has brightened over "favorable developments in supply." Ten days ago it eliminated quantitative restriction on purchases of copper. Expect complete revocation of M-16 after June 30.

Enough For All — If industry wants it, there will be about 10 per cent more copper available this year than the 1,445,764 tons delivered to fabricators in 1952. The increase will be possible because of higher imports and a bigger volume of secondary metal refined from scrap.

It's questionable if all that metal will be absorbed. Today industry — both civilian and defense — is operating at a tremendous pace, yet no one is really strapped for copper. April allocations won't all be taken up and supplementary tickets could be had for the asking. This doesn't mean copper business will go through the wringer this year; bringing the market a little closer to earth will help the industry in the long run.

Controls the Culprit—Chief reason for the dramatic easing: Lifting of the price lid. Controls reached a pinnacle of absurdity in copper, where U. S. production was frozen at 24.5 cents while foreign metal carried tags of 36.5 cents in our market.

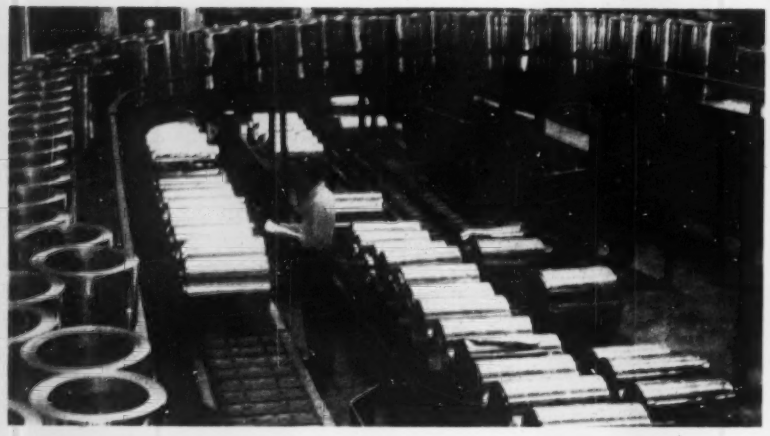
Average cost to fabricators during this period was 29.30 cents, though they could charge only 28.50 cents for copper content of their product. Phelps Dodge Corp. believes that had the price been permitted to find its own level, it would have been around 29 cents for both domestic and foreign copper anyway.

Painful Period—The market is now undergoing a painful adjustment from the distortions built up during control. When price ceilings were abandoned Feb. 25, U. S. primary price skipped up 3 to 7.5 cents a pound. Custom smelters' prices ballooned as high as 34.5 cents, and foreign price held at 36.5 cents, highest in 50 years.

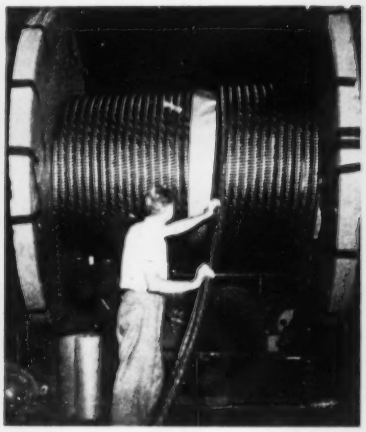
Since then the tumult has subsided and a temporary world price of 30 cents is emerging. The outlook is for a decline this summer, perhaps to 26 or 27 cents and even lower as the year winds up.

How Much and When—Copper expansions at home and abroad are expected to add about 165,000 tons to supply this year; a potential increase of 530,000 tons by 1956 is possible. With imports and secondary metal, U. S. fabricators could have available as much as 2 million tons of copper in 1956 if needed.

Secondary Follows—The secondary business will be expanded proportionately. Recirculation of scrap is a big factor in operations of brass mills, ingot makers, smelters, refineries and foundries. Each year dealers put back into circulation more copper and its alloys than is mined in this country. Price con-



Heavy rolls of brass and copper move on a conveyor system through a Chase Brass & Copper Co. Inc. plant



High-power underwater copper cable is reeled at the Habirshaw Division, Phelps Dodge Copper Products Corp.

trols stymied action in this sector considerably. American Smelting & Refining Co. points out that purchases of scrap by U. S. smelters and refineries in 1952 were less than 40 per cent of the quantities bought in the years 1948 to 1950.

When price gates swung open in February, a flood of scrap streamed into the market. Intake by custom smelters swelled to 19,991 tons in March, compared to 10,337 tons in February, 6486 in January and a 1952 average of 5200. While this spectacular intake can't be maintained all year, it's likely that copper derived from this source will reach 140,000 tons — an all-time high.

Stockpile Short—Copper producers have a comfortable hedge for expansion through government market and price guarantees. Here's how Robert G. Page, Phelps Dodge president, explains a typical floor contract: If the market drops below the 22 cents stipulated in its contract, the company can put copper to the government for stockpile at that price; if the market price is higher, the government has a right to buy at market price but doesn't have to.

About 8000 tons of copper has been going to the stockpile each month, but six domestic companies had DMPA floor price contracts terminated with removal of price ceilings. Tonnage involved topped 50,000 tons yearly. Stockpilers don't intend to support the market with their purchases. ODM says it won't consider spot offers and that all metal going into stockpile is taken under existing contracts. If any real softening comes in copper, look for stockpiling to increase sharply.

Labor a Factor—Mine strikes will cancel all bets on easy supply. Mine contracts start opening about July 1. The number of unions representing copper miners is appalling. Kennecott Copper Corp., producer of one-fourth of the free world's copper, deals with no less than 36 different bargaining units at its western mining divisions.

The Chilean Problem — During the past 25 years, the U. S. has shifted sharply from the position of greatest copper exporter to the greatest net importer. Chile supplies about 60 per cent of these imports from Anaconda and Kennecott-owned mines. Since last May, Chile has sold its copper here for 36.5 cents, but much is going begging.

Bulk buying and selling controls vested in Britain's Ministry of Materials should be lifted Aug. 1. As a result, free dealings in copper on the London Metal Exchange would resume, putting the exchange back in its prewar eminence. The Ministry of Materials currently holds over 140,000 tons of copper; if it were unloaded to get dollars, the market could burst wide open.

On the Horizon—Aluminum is making deep inroads in copper's domain, and copper men know price increases add greater incentive for substitution. Before 1946, aluminum sold at 2 to 20 cents more per pound than copper. Since 1947 copper has been undersold by from 1 cent to about a dime today.

Yet the metals aren't in direct conflict, but supplement each other, says J. J. Russell, chairman, Revere Copper & Brass Inc. His company is the country's largest independent copper fabricator and also the biggest nonintegrated wrought aluminum fabricator.

Business Strong—Users of copper see a good year ahead. Calumet & Hecla Inc. reports heavy sales of tubular products by its Wolverine Tube Division, principally for construction, refrigeration and air conditioning. Brass mills see a chance for full operations. Scovill Mfg. Co. at no time last year could use its mill facilities to their limit. Bridgeport Brass Co., steadily pumping money into expansion, sees good demand, lower prices.

Wire and cable companies find their market strong. Electric utilities have big expansion plans for years ahead. Wire companies watch the price spread between aluminum and copper closely, but believe copper will hold its own in a number of wiring applications, particularly the small sizes. Copper in volume will be needed in the million-odd homes going up this year, in appliances and autos, in electronics, office machinery, giftware.

Copper consumption has increased about 70 per cent in the past 25 years, and, despite substitutions, is expected to increase another 45 per cent in the next 25, according to Paley Report projections. Copper men aren't too worried about a market for their favorite metal. Now that supply problems are being licked, they believe the highest hurdle has been cleared.

Stop Worrying About Recession!

That's the advice of a Commerce department man who gives the administration's answer to: What happens to manufacturing when defense spending falls?

AMERICA'S ECONOMY is healthy enough to provide both "guns and butter" now, but we can thrive on a purely peacetime economy if defense expenditures drop off. That's how Walter Williams, under secretary of commerce, answers the question, "After defense spending declines, what will happen to manufacturing?"

Speaking before members of the American Management Association in New York, the Commerce department official said that federal expenditures for munitions may trail off for several years but not at an alarming rate. Meanwhile, government spending for highways and schools could well supplant defense items in the budget.

No Sudden Drop—Attacking directly the possibility of a recession, Mr. Williams pointed out that our defense will continue to be a national problem during the foreseeable future. About $110 billion allotted to national security remained unspent by Dec. 31, 1952. A new defense budget of about $50 billion this year leaves a backlog of $160 billion.

Mr. Williams addressed men who may have seen ominous signs of a sharp business decline in slackening government spending, brought about in part by congressional economy drives. Since defense expenditures make up about 60 percent of the federal budget, government cost-cutting would be felt first and foremost among defense producers.

The Pessimist's Platform — Gloomy predictors of a business recession claim that plant and equipment investment, high in recent years, cannot go forward at the same rate. The speaker answered this by saying that ever-increasing needs of a growing civilian population will still have to be satisfied.

Mr. Williams believes that generally, fears of a drop-off in business have a strong psychological, not factual, basis. Pessimists say consumers durable goods are decreasing in demand. Others think we are "about due for a depression."

NEA

WALTER WILLIAMS
. . . answers a ticklish question

Brighter Side—To prove his contention that our economy will be strong in peace or war, Mr. Williams declared that our productivity curve continues to increase by about 3 per cent a year. At the present rate of climb, gross national output will rise from $365 billion annually at present to $420 billion in 1958. As real wages rise, purchasing power of the average man increases and consumers can buy a greater number of goods.

Economic measures such as social security benefits and unemployment insurance may restrain any threatened decline. Population growth alone will mean a steady market for new homes and equipment. Residential construction should score important gains, replacing military building.

More for Investment—Finally, a reduction in government expenditures would automatically bring a lower tax burden upon individuals and businesses, leaving management more to expend on plants.

"Let's stop worrying about effects of peace," Mr. Williams concluded. "Instead, management should improve its products by developing bettter research and technological methods. Industry should work to achieve greater efficiency and economy to develop lower prices for better goods. Management should study plans toward better relationships with employees."

Community Planning—Industry has a stake in its community and should help develop constructive programs among city groups, the speaker added. Since many people have a superficial economic training, "it is the responsibility of management to make our economic system tick."

If businessmen are to meet the challenge of increasing their civilian sales, American businessmen should combine this forceful program with sales efforts "to an extent never engaged in before."

Packer To Make Cans

California Packing Corp., San Francisco, one of the nation's largest canners of fruits and vegetables, created something of a stir in the can making industry last week when it announced it would operate its own small can manufacturing plant this year in conjunction with one of its Fruitvale, Calif., food canneries.

"The new plant, now nearing completion, will manufacture buffet size cans of which a large quantity is used at that particular location and the entire output will be utilized for Del Monte products," the company's announcement said. "Machinery and equipment are being installed preparatory to trial runs to be made in advance of the 1953 canning season."

This marks the first entry of the company into the can making field.

Until two years ago, major can manufacturers would lease, but not sell, their can making machinery. A court decision following an anti-trust suit had ordered them to have their can-making equipment available for purchase as well as lease.

However, most canners have continued to lease the equipment and the movement now of California Packing into the can-making trial has brought about considerable speculation on future prospects of other canners doing the same thing.

IRON ORE: Where it will come from

	1942	1951	1960	1970	1980
Lake Superior District	93,009	94,350	55,000	45,000	35,000
Other U. S. Districts	13,700	21,840	22,000	25,000	25,000
Total U. S.	106,709	116,190	77,000	70,000	60,000
(All figures in thousands of long tons)					
Foreign	750	10,145	37,000	45,000	57,000
Concentrates	—	138	20,000	30,000	40,000
Net Shipments for U. S. Consumption*	105,459	122,177	134,000	145,000	157,000

SOURCE: Cleveland Cliffs Iron Co., Cleveland

*Less exports for 1942 and 1951

New Era Arriving for Iron Ore

A Cleveland-Cliffs official gives an analysis of how we'll get the raw material for the steel for the durable goods from now until 1980

EVEN SCHOOLBOYS know that reserves of high grade iron ore in the Lake Superior district, supplier of about 85 per cent of the ore consumed in the U.S., are dwindling. What the schoolboys don't know, and what the iron and steel industry has been scrambling to find out since World War II, is where the iron ore will come from for the ever increasing steelmaking capacity of this country 20 and 30 years hence.

H. S. Harrison, financial vice president of Cleveland-Cliffs Iron Co., Cleveland, gave his company's forecast in a talk before the National Federation of Financial Analysts Societies in Philadelphia.

Concentrate—Summarized in the table above, Mr. Harrison's figures point to a decreasing tonnage of low-cost, direct-shipping ores of the Mesabi range and an increasing, and finally primary dependence, on foreign ores and beneficiated low-grade ores over the next few decades.

Foreign iron ore sources will be found, developed and used only after weighing the risk factors such as long supply lines over open sea in case of war and the possibility of government expropriation or interference. Nevertheless Mr. Harrison said, "Based on present knowledge, it appears that foreign ores represent the next cheapest (to domestic high grade ores) and probably the largest single source of iron ore for the nation's steel industry 30 years from now."

Underlining that prediction, Venezuela, Cuba and Liberia increased iron ore shipments to the U. S. in 1952 by some 2 million net tons, says the American Iron and Steel Institute. Over-all foreign shipments declined 2 per cent to about 10.9 million net tons in 1952 due to the steel strike, as did domestic iron ore output which dipped 16 per cent to about 109 million net tons.

Added Cost — Complicating the picture is the fact that approximately 80 per cent of the blast furnace capacity of the U. S. lies in the Great Lakes area. A great advantage during the heyday of the Mesabi. Now transportation costs must be added to higher-than-ever labor costs and larger initial investment costs for concentrates — $30 an annual ton of capacity for concentrates compared to $4 per ton for open-pit and $8-$12 for underground. For imports, ways must be found to get the quantities required to the blast furnaces in the Midwest.

Pinpointing known iron ore reserves, Mr. Harrison estimated Lake Superior ore at 2.2 billion long tons, exclusive of low-grade ores. For these low-grade ores, he called 8.1 billion long tons, of which 1.7 billion long tons are magnetic, a realistic estimate. Of the foreign sources, Cleveland-Cliffs estimates Canada's reserves, including Labrador, at a minimum of 1.5 billion long tons of ore with 50 per cent iron content. Venezuelan ore reserves were pegged at 1.5 billion long tons, at least. Brazil's tonnage may run 4 billion long tons or more, while reserves in other South American countries amount to "several hundred million tons." Sweden has approximately 2 billion long tons of high-grade ore, much of which will be needed for Europe.

World reserves are not the problem; it's a matter of balance between cheap foreign ore with high risk and high-cost domestic ore with no risk.

Kennametal Is Purchasing Agent

Kennametal Inc., Latrobe, Pa., has been appointed the fourth purchasing agent in the government's program for acquiring columbium-tantalum ores and concentrates for stockpiling and other defense purposes.

The program provides for payment of a bonus to the producer. It runs until Dec. 31, 1956, or until the government has purchased 15 million pounds of the metal. So far, only 600 tons have been bought.

The other three purchasers are: Fansteel Metallurgical Corp., North Chicago, Ill.; Wah Chang Corp., New York; and Emergency Procurement Service of the General Services Administration, Washington.

MACHINERY ERECTION

Business will continue to climb this year for the movers and erectors of industry's inside "furniture"

U. S Steel

NEXT TIME you have any furniture moving to do think of the machinery movers and erectors. The heaviest object you are likely to grapple with is the refrigerator, weighing about 380 pounds. Machinery erectors would call a cargo 10 times that heavy "a light load" and would not shy from handling equipment 2200 times as heavy as the refrigerator.

Machinery movers and erectors disassemble, move and/or reassemble all the heavy machinery and equipment in the manufacturing plant. They'll tackle anything from a single light stamping press to a complete factory; they operate in spaces from the cramped quarters of a ship's hold to a new and expanded plant site; they're insured in some cases up to $1 million against damaging everything and everyone from the boss' secretary to a 6000-ton press.

Shifting Work — Since World War II, machinery erectors have been engaged mostly in erecting and moving new pieces of equipment. Expansions in the steel industry, aircraft parts manufacture, among electrical appliance makers, chemical, pharmaceutical and rubber companies have accounted for much of this business. A major shift in industry's production targets such as from wartime operations to peacetime work and vice versa, always brings a wave of erecting business. In the long run, erectors say, their business is divided about equally between erecting new machines and moving and reassembling old ones.

Machinery erectors with 200 workers are few and those employing even 10 men are not numerous. Detroit telephone books list 41 machinery movers, with about the same in New York and Chicago. Cleveland yellow pages list about 30 such companies and, in Los Angeles, there's only one large mover.

Factory Hits the Road—Roger Sherman Transfer Co., East Hartford, Conn., likes to talk about its two-month hauling job for Norton Co., Worcester, Mass. Sherman Transfer moved Norton's grinding and lapping machine-producing equipment from one plant to another about a mile away while output from Norton continued at an all-time high.

From Detroit's Commercial Contracting Corp. story file comes a saga of erecting a 6000-ton forging press at a Detroit plant of one of the major automobile companies. The press weighed 420 tons. The largest part of the unit weighing 247 tons was shipped on a special underslung railroad flatcar designed to transport heavy ingots for a steel company. CCC also moved Inshield Products Co., Toledo, O., from a three-story building to a new plant five miles away between the 4:30 whistle on Friday afternoon and the regular starting time on the following Monday morning.

Cleveland Cartage Co., Cleveland, is girding itself, and has been for the past two months, for a 200-tons-in-one-piece hauling job which it expects to do this fall. A specially designed carrier, equipped with low pressure tires, will carry that tremendous load over the highway "without any damage whatever, as the proper equipment will be used," says J. C. DeVenne, president of Cleveland Cartage.

American industry is on the move as never before, machinery erectors testify. Since World War II, their sales have climbed steadily, and this year they expect their volume to be about 10 or 15 per cent ahead of 1952, which was itself a good year.

Growing Business for Sky Hooks

Steel bolts are rapidly supplanting the traditional wooden beams for holding up mine roofs. Roof-bolting, or "sky-hooking" as some call it, is one of the fastest growing techniques in mining, says the U.S. Bureau of Mines.

Usage of steel bolts in overhead rock is becoming wide-spread among coal producers in particular. Only seven years ago, says the bureau, there wasn't an operating coal mine in the U. S. employing a systematic plan of roof bolting; today, there are 604 bolt-protected mines. Steel bolts at present are holding ceilings up in an additional 117 mines that produce metals and other minerals besides coal.

Several types of bolts are currently available, but nearly 75 per cent of those installed are the slit-rod and wedge type. These are steel rods usually about one inch in diameter and five to six inches long, slit at one end and threaded at the other. A steel wedge is placed in the slit end, and that end of the rod is inserted in a hole drilled in the mine roof. A pneumatic hammer then drives the rod home. The wedge spreads the bolt, anchoring it securely to the sides of the borehole. A steel bearing plate and nut are placed on the protruding threaded end.

"Sky-hooking," despite its only recent wide acceptance, is not new in the mining industry. A Wyoming coal mine tried it 30 years ago, and roof bolts were installed in an underground lead-zinc mill about 20 years ago.

Atomic Advice Offered

New group will present industry's views and recommendations on uses of atomic energy

PRIVATE industry is banding together for the first time to make its voice heard at governmental levels on atomic policy, and to advance industrial use by unmasking mystery surrounding atomic energy and its applications.

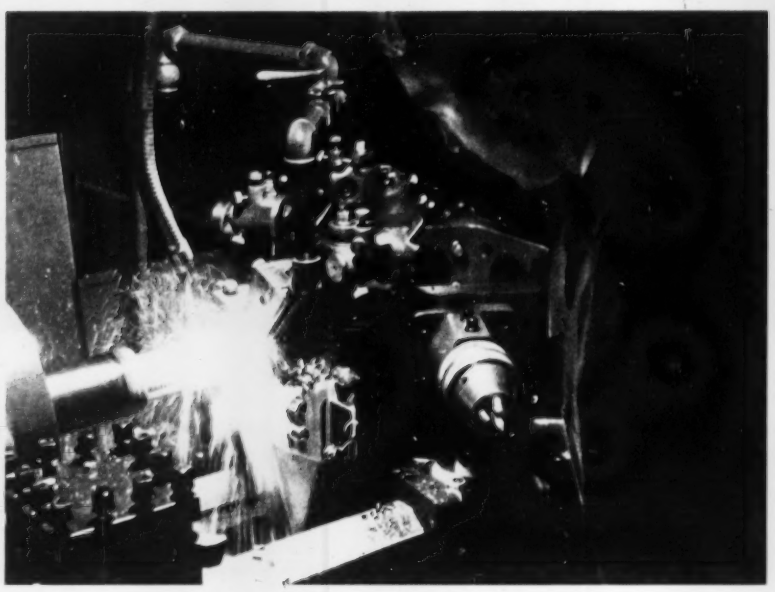
Atomic Industrial Forum Inc. filed incorporation papers last week in New York. It's sponsored by a cross-section of industry, science and education. Purpose of the organization, says Walker L. Cisler, president, Detroit Edison Co., Detroit, and a director of the group, is "advancement of understanding in technical, economic, legal and managerial aspects of atomic energy and how to accomplish its use in industry."

To Advance Industry — While the group claims it won't take an active interest in changing the Atomic Energy Act, Mr. Cisler says, "If industry is to move forward, legal barriers must be removed within the framework of required security." The group would still be dependent on the AEC's Clearance Committee and Information Division, carrying on the education job from there, says T. Keith Glennan, president, Case Institute of Technology, who proposed formation of the association after he had resigned as member of the Atomic Energy Commission.

Atom Plant—An atomic power plant can be built "within two to five years," says Albert L. Baker, chairman of the Vitro Mfg. Co., Pittsburgh. But he says there's no present assurance it would be economical.

Possible applications include use in weapons, seeding other nuclear power generators and powering mobile units such as ships and planes. He believes plutonium is a better high grade fuel material than uranium isotopes.

Amendments—The administration is believed to be urging Congress to amend the Atomic Energy Act to allow industry to possess under license critical amounts of uranium 235, to produce plutonium, and to have limited patent rights in processes developed.



Dreaming up sales lures for a changeover from military production . . .

Tool Builders Sight Civilian Targets

"THE GREAT danger to our country is obsolescence; our great strength is productivity. It is the job of machine tool builders to lessen that danger and increase that strength."

With these words Tell Berna, general manager of the National Machine Tool Builders Association, summed up the challenge to his industry at the Westinghouse Machine Tool Electrification Forum in Pittsburgh last week.

New Target—As backlogs are chopped down and unrated orders come on the books, the major source of the industry's business will shift from tools for national defense to machines for civilian goods. Civilian producers will ask, "How can tools help us cut costs?"

Evidence of tool builders' interest in cutting costs and improving production showed up at every turn during the Pittsburgh forum. Addition of automatic features to standard machines and development of simpler, more reliable control systems for automatic machines keynoted formal and informal discussions.

Ready-Made—The machine tool industry's job is easily apparent, builders say. Answers to high costs must come through increasing productivity. As the industry turns to tools for civilian production, the salesman's job changes completely. Instead of trying to pacify customers by explaining long delivery times, the salesman will have to create a demand on the customer's part.

The saddest part of the situation is that tools are becoming more obsolescent every year. At least one-third of machines which should be retired are being left on the job. Obsolescent equipment means lost production.

Among other subjects for discussion at the forum was administration policies. As at the machine tool builders meeting in New York a week earlier (STEEL, Apr. 13, p. 68), government plans, including the Vance proposal for defense capacity, held the spotlight. (For more on the Vance plan, see p. 73.)

Share Interest—Similar interest in government intentions was shared by members of the American Machine Tool Distributors Association in last week's meeting in Cincinnati. Henry R. Hanson of William K. Stamets Co., Cleveland, told the association that either the Vance plan or something similar would be supported by the industry as far superior to wholesale stockpiling of machines for an emergency reserve.

Nearer Agreement

Defense planners are closer in the controversy over stand-by vs. dual-purpose plants

THE DEFENSE program may soon follow a more clearly-marked route if mobilization planners continue to move nearer agreement.

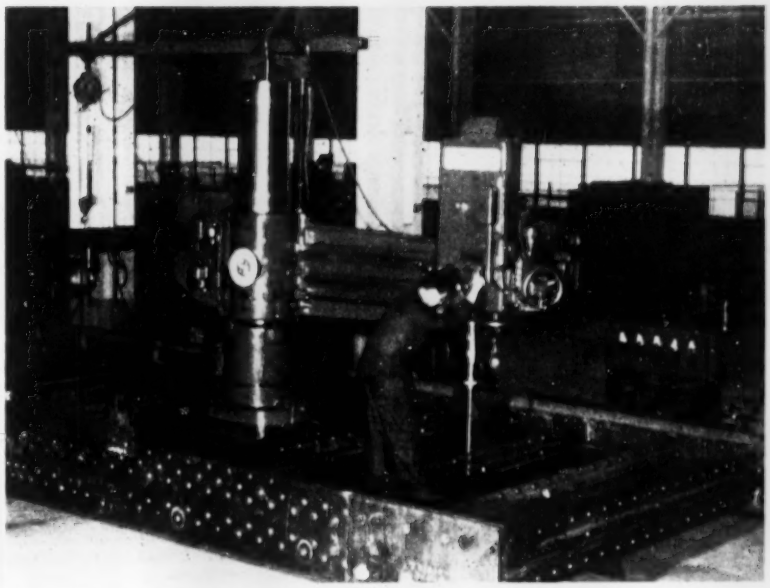
Largest schism in defense thinking has been on preparation for an all-out war without a hefty output of military items soon obsoleted by new developments.

The Vance Plan — One solution to the problem was offered last January by the Office of Defense Mobilization's Production Advisory Committee (STEEL, Jan. 19, p. 50). The committee headed by Harold S. Vance, president, Studebaker Corp. proposed that the U. S. buy and stockpile about $300 million in new machine tools annually for ten years. Gaps in the program, said the committee's report, could be plugged by the purchase of between $1 and $2 billion of additional tool and production facilities. Stand-by plants could roll out armaments at a drop of a Defense department order.

Defense Secretary Charles Wilson is cool to the idea, however. He favors emphasis on dual-purpose plants which can be quickly changed over from civilian to military production. These facilities would be financed by private capital but aided in construction costs by tax write-off allowances.

Toward Agreement? — Since then, Mr. Vance's views show signs of moving closer to those of the defense secretary. In a speech sponsored by eastern chapters of American Society of Tool Engineers at their tool Engineers' Day banquet in New York on Apr. 14, he said, "I think Mr. Wilson's proposal (for dual purpose facilities) is sound, but I don't think it goes far enough." He still maintained that certain military plants must be erected and equipped, even though not commercially supportable.

Both automotive executives agree, however, that the nation should strive to narrow its mobilization base. Under the Truman administration, an effort was made to spread out defense contracts across the nation. Both Messrs. Wilson and Vance say that fewer plants completely devoted to defense production, instead of many plants with small defense contracts, would result in a considerable saving to the government. Final decision won't come for a while. It will be made by President Eisenhower, who may be waiting for the Vance and Wilson viewpoints to come even closer together.



Bringing Mahomet to the Mountain

Engineers at the new Link-Belt Co. plant in Colmar, Pa., solved a problem in bulky girder fabrication by bringing the machine to the work — a reversal of ordinary procedure. Rivet holes were drilled in a 57,000 pound built-up girder by setting up a 6-foot arm radial drill on top of the girder, which is now on its way to Venezuela where it will form part of an ore handling system

Machine Tool Hiring Still Climbs

A government survey of 211 machine tool plants reveals that production capacity has now reached a virtual level between military and civilian requirements. Showing the industry's expansion, the Bureau of Employment Security says machine tool industries employ 107,000 an increase of 70 per cent since Korea. Another 3 per cent gain is expected by next July.

Profits from Tool Sale

Sale of 228 surplus machine tools by the Air Force brought four times what the tools were worth as scrap at a Marietta, Ga., government aircraft plant. The tools were offered to the public after military screening found them useless to government agencies or the armed services.

Some 111 bids were made on the tools sold, and the Air Force collected $215,000 in proceeds. Their scrap value was $52,000.

SELECTED DEFENSE CONTRACTS IN EXCESS OF $100,000

PRODUCT	CONTRACTOR
Welding Machines	Sciaky Bros. Inc., Chicago
Trucks, Fork, Gasoline	Towmotor Corp., Div. 35, Cleveland
Automotive Spare Parts	International Harvester Co., Chicago
Shells, 105 mm	Altorfer Bros. Co., Peoria, Ill. Malleable Iron Range Co., Beaver Dam, Wis.
Shells, 155 mm	Deere & Co., Moline, Ill.
Shells, Mortar	Madison-Kipp Corp., Madison Wis.
Boosters	Northwest Automatic Products Corp., Minneapolis
Fuzes	Price-Pfister Brass Mfg. Co., Los Angeles Speed-O-Print Corp., Chicago
Gun Parts, 20 mm	Magnavox Co., Ft. Wayne, Ind.
Aircraft Indicators	Crown Cork & Seal Co., Baltimore
Oxygen Indicators	Bendix Aviation Corp., Detroit
Pulse Generators	Stamford Electronics Co., Stamford, Conn.
Airspeed Indicators	Lackner Co. Inc., Cincinnati

J. ROBERT KELLEY
. . . new president of ASMMA

Mill Supplies Gain

Heavy industrial output leads to rising sales of production tools and supplies

SALES of mill supplies and industrial equipment so far this year are ahead of the same period in 1952. Even if a dip occurs, 1953 volume will be no more than 5 per cent below last year.

That is the consensus of 2500 manufacturers and distributors who attended the Triple Mill Supply Convention of one manufacturers' association and two distributors' groups in Miami, Fla., Apr. 12-16.

Harder Selling—Even with this rosy outlook, sales organizations will have to do some real selling. J. Robert Kelley, vice president and general manager of Shaw-Box Division, Manning, Maxwell & Moore Inc., Muskegon, Mich., and new president of the American Supply & Machinery Manufacturers Association, said now selling is required on a replacement or improvement basis for cost reductions rather than for expansion of facilities.

"The problem in the future will not be how to produce more goods," Mr. Kelley continued, "but how to distribute the increased amount of industrial supplies and equipment this industry is geared to produce so easily."

Check Your Packaging—Distributors will ask manufacturers to package industrial supplies and equipment in reshippable cartons or boxes in distributors' normal resale units.

Studies indicate savings of 3 to 5 per cent for distributors on such items as pipe, fittings.

Healthy Steel Industry — U. S. Steel Corp. Chairman Benjamin F. Fairless, featured speaker, said a healthy steel company, efficiently managed, should be geared to an average peacetime operating rate of about 80 per cent. With one-fifth of its capacity standing ready for a national emergency, the company should be able to earn a profit sufficient to support normal peacetime growth.

Since January, 1951, when the government clamped on wage and price controls, Mr. Fairless said steel prices were permitted to rise 4.75 per cent. In that time, employment costs and expense of purchased goods and services rose nearly three times as much.

Among new officers elected, in addition to Mr. Kelley, was T. Gordon Vaughan, W. M. Pattison Supply Co., Cleveland, to be president of National Industrial Distributors Association. B. S. Barker, Pye-Barker Supply Co., Atlanta, was elected president of the Southern Industrial Distributors Association.

Plan AISI Conference

Sinclair Weeks, secretary of commerce, will be the principal dinner speaker at the 61st general meeting of the American Iron & Steel Institute in the Waldorf Astoria hotel, New York, May 27-28. The dinner will be held on the evening of the second day.

Dr. John Chipman, in charge of the Department of Metallurgy, Massachusetts Institute of Technology, Cambridge, Mass., will present the Charles M. Schwab memorial lecture.

Speakers at the general meeting on May 28 will be T. M. Girdler, chairman of Republic Steel Corp., Cleveland; H. G. Hilton, president, Steel Co. of Canada Ltd., Hamilton, Ont.; and B. F. Fairless, chairman of U. S. Steel Corp.

Preliminary schedules call for three technical sesions to be held in the afternoon of May 27.

Quality in Demand

Greater requirements for lubricants test engineers' ability to develop heat-resistant products

PROBLEMS growing from higher speeds and stresses with new metals occupied considerable attention at the eighth annual meeting of the American Society of Lubricating Engineers in Boston last week. Members agreed that the ingenuity of lubricating engineers will be tested in years ahead.

New types of lubricants are necessary to meet stringent requirements of future aircraft turbine engines and industrial processes utilizing atomic power. Progress has already been made toward that goal, say suppliers of lubricants and lubricating systems.

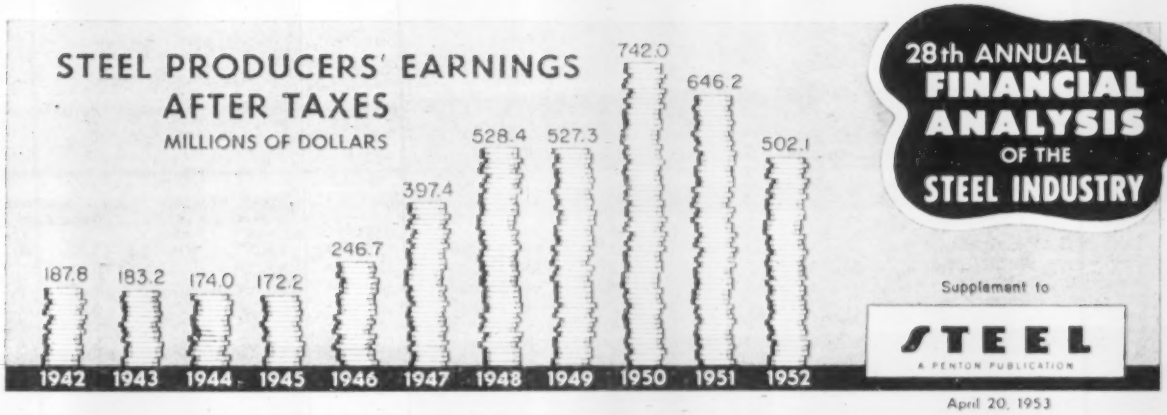
Surface Conditions—Many rubbing surfaces of aircraft turbine engines operate under conditions of boundary lubrication; therefore friction and surface failure properties of the lubricant are of great importance. Much needs to be done to improve lubricating at extremely high and low temperatures at high stress operating loads.

A spokesman of Pratt & Whitney Aircraft Co., Hartford, Conn., remarked that jet engines have brought out lubricating problems faster than they can be solved. High temperatures and stresses, coupled with new alloy steels, challenge lubricating engineers.

Main Difficulty—A lubricating engineer of Bower Roller Bearing Co., Detroit, said the first problem is to get lubricants to the right spot on aircraft roller bearings. Lubricating engineers should participate in design as well as selection of oil and grease for new products, he advised.

Much attention was given to education of plant maintenance personnel, notably hydraulic journeymen, because of increasing use of hydraulics in controlling machine operations. Industrial trends toward automation will spotlight the need of efficiency lubrication as never before.

Dr. W. E. Campbell of the Bell Telephone Laboratories, Whippany, N. J., was elected president of the association. Vice president at large will be Mr. John Boyd of Westinghouse Electric Corp., Pittsburgh.



28th ANNUAL **FINANCIAL ANALYSIS** OF THE **STEEL INDUSTRY**

Supplement to STEEL
A PENTON PUBLICATION
April 20, 1953

Tax Collector Biggest Loser in Steel Strike

Work stoppages in 1952 caused government to lose billion in revenues from steel producers. Production, sales and net income suffer from interruptions

LARGEST loser in the 1952 steel strikes was Uncle Sam. His take in federal income and excess profits taxes from the steel companies was one billion dollars less than it would have been had there been no work stoppage. Additional hundreds of millions were lost due to lower personal income taxes from shareholders, steel workers and others dependent on the steel industry and in lowered corporate taxes from steel consuming companies whose operations and profits were curtailed by inability to obtain all the steel they needed.

The steel producers actually paid $800 million less in federal taxes in 1952 than in 1951. Normal federal income taxes dropped 50.8 per cent from $965 million to $475 million. Excess profits taxes dropped 116 per cent from $257 million to a credit for $41 million.

Everybody Lost

All other parties to the steel dispute also lost. The steelworkers lost about $650 each in wages, or an aggregate of more than a half billion dollars. The steel producers lost about $144 million in net income, which last year was 22.3 per cent below 1951. Production of steel dropped 12.1 per cent and net sales declined 9.7 per cent.

Net income of the 30 companies last year totaled $502,144,737, compared with $646,185,883 in 1951. Only one company, Kaiser Steel Corp., showed higher earnings in 1952 than in 1951. Kaiser was not affected by the steel strike.

STEEL's 28th Annual Financial Analysis of the Steel Industry shows the work stoppages to be the dominating factor in 1952. The study includes financial and operating data from 30 companies representing 94 per cent of steelmaking capacity in the United States.

Income-to-Sales Ratio Drops

As result of the strike interruptions the companies' net profit per dollar of sales declined again. In 1950, the companies retained 7.99 cents as profit. In 1951, they were able to retain 5.71 cents and in 1952 they could keep only 1.91 cents.

Despite the fact the mills were closed for nearly two months by strikes last spring and summer employment costs were less than 1 per cent below those for the preceding year.

Sharp increases in wage and other employment costs, without fully compensating price increases, contributed to the reduction in profits.

Net income per ton of ingot production was $5.64, off 71 cents from 1951. Net income per ton of ingot capacity was $1.71, down $1.78 from 1951.

Steelmaking capacity is mounting steadily. As of Jan. 1, 1953, the rated capacity was 117,547,470 net tons. This compares with 108,587,670 net tons as of Jan. 1, 1952, and 101,229,650 on Jan. 1, 1951.

To finance its huge expansion program the industry borrowed heavily. Funded debt was increased 38.9 per cent. It also increased the total provision for depreciation and depletion by 17.7 per cent. Accelerated depreciation or amortization is shown by 23 of the 30 producers.

Increase in surplus amounted to 6.5 per cent.

Total capitalization was increased 9.3 per cent in 1952. The additions to funded debt and surplus account largely for the increase in capitalization. Increases in common and preferred stock valuations also contributed to the expanded capitalization.

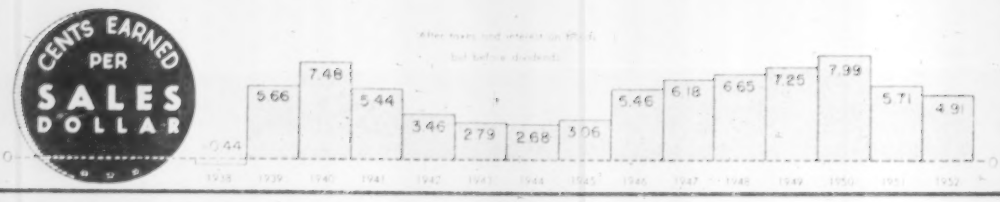
The ratio of current assets to current liabilities improved. Current liabilities decreased 14.2 per cent while current assets were down only 6.4 per cent. This was the first time since 1949 the current ratio has improved. Result: Working capital increased $40,740,137.

More Common Shareholders

Through stock splits, stock dividends and issuance of additional shares the number of common shares outstanding increased 1.8 per cent.

On the other hand, the number of preferred shareholders declined 0.6 per cent.

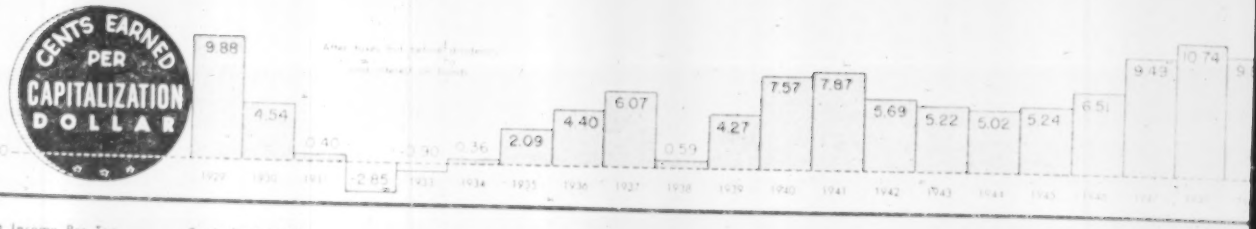
And among the losers from the 1952 strike, don't forget the common shareholder whose net income per share dropped 25.6 per cent.



	Rated Ingot Capacity, Net Tons		Ingot Production, Net Tons		Steel Operating Rate, Per Cent		Net Income Per Ton Ingots Produced	
	1952	1951	1952	1951	1952	1951	1952	1951
United States Steel Corp.	36,399,000	34,613,000	29,436,000	34,323,000	85.00	101.34	$4.88	$5.37
Bethlehem Steel Corp.	16,800,000	16,000,000	14,116,342	16,405,677	84.02	102.54	6.41	6.49
Republic Steel Corp.	10,262,000	9,490,000	7,961,238	9,112,096	82.80	101.95	5.54	6.01
Jones & Laughlin Steel Corp.	5,300,000	4,817,000	4,710,000	5,032,000	83.00	103.82	4.11	6.16
National Steel Corp.	5,100,000	4,750,000	NA	NA	NA	NA	NA	NA
Youngstown Sheet & Tube Co.	4,917,500	4,370,000	3,937,190	4,451,854	90.10	104.75	5.82	6.88
Armco Steel Corp.	4,718,000	4,525,000	4,042,473	4,357,562	85.68	96.30	7.75	8.03
Inland Steel Co.	3,906,233	3,750,000	3,307,253	3,837,268	84.66	102.33	7.18	8.96
Colorado Fuel & Iron Corp.[1]	2,024,000	1,522,661	1,892,485	1,615,216	93.50	106.08	3.01	6.22
Wheeling Steel Corp.	1,860,000	1,860,000	1,461,985	1,874,236	78.76	100.77	7.18	9.28
Sharon Steel Corp.	1,550,000	1,550,000	1,284,170	1,600,205	82.85	103.24	3.99	5.54
Kaiser Steel Corp.[1]	1,380,000	1,380,000	1,381,862	1,217,196	100.13	101.43	7.53	6.17
Crucible Steel Co. of America	1,350,709	1,198,960	NA	NA	NA	NA	NA	NA
Pittsburgh Steel Co.	1,152,000	1,072,000	971,029	1,091,361	84.29	101.81	5.30	6.72
Barium Steel Corp.	893,000	893,000	690,128	627,220	77.28	70.24	15	15
Allegheny Ludlum Steel Corp.	889,200	817,200	569,921	817,058	64.09	99.98	10.12	10.81
Granite City Steel Co.	720,000	720,000	621,574	746,911	86.32	103.74	8.02	6.88
Newport Steel Corp.[5]	708,537	764,700	400,159	540,824	56.52	76.75	4.75	4.05
Lukens Steel Co.[6]	675,000	675,000	555,102	686,083	82.21	101.61	4.17	5.17
Detroit Steel Corp.	660,000	660,000	529,132	611,788	80.22	97.70	8.08	16.31
Alan Wood Steel Co.	625,000	625,000	658,119	623,232	105.35	99.72	3.42	3.70
Copperweld Steel Co.	618,586[23]	554,400[23]	22	22	22	22	22	22
McLouth Steel Corp.	579,700	550,000	NA	NA	NA	NA	NA	NA
Northwestern Steel & Wire Co.[7]	573,000	321,000	313,856	338,690	54.77	105.51	2.94	8.61
Rotary Electric Steel Co.	425,000	425,000	323,959	372,116	76.23	87.56	5.69	6.67
Keystone Steel & Wire Co.	425,000	400,000	389,762	323,956	91.71	80.99	10.45	11.58
Laclede Steel Co.	410,000	410,000	413,292	389,662	100.80	95.01	5.16	7.18
Continental Steel Corp.	394,000	394,000	325,138	363,181	82.52	92.25	4.54	4.21
Midvale Co.	321,947	271,654	99,967	119,002	30.76	43.66	11.88	13.51
Carpenter Steel Co.[8]	73,474	73,474	72,379	70,863	98.51	96.45	39.56	55.21
Total (or average)	106,313,671	99,156,052	80,498,715	91,612,523	81.56	99.11	85.61	86.38

	Number of Shares of Common Stock Outstanding		Common Stock Valuation		Preferred Stock Valuation	
	1952	1951	1952	1951	1952	1951
United States Steel Corp.	29,109,756	29,109,756	$870,325,200	$870,325,200	$360,281,100	$360,281,100
Bethlehem Steel Corp.	9,582,942	9,582,942	303,459,830	303,459,830	93,388,700	93,388,700
Republic Steel Corp.	5,902,719	5,896,719	136,060,726	135,979,066	28,204,300	28,204,300
Jones & Laughlin Steel Corp.	6,209,654	6,200,654	62,007,660	62,007,000	29,357,660	29,357,000
National Steel Corp.	7,362,045	7,362,045	73,620,450	73,620,450	None	None
Youngstown Sheet & Tube Co.	3,350,016	3,350,016	105,088,053	105,088,053	None	None
Armco Steel Corp.	5,214,994	5,214,997	52,149,936	52,149,966	None	None
Inland Steel Co.	4,899,380	4,899,315	62,502,716	62,500,000	None	None
Colorado Fuel & Iron Corp.[1]	2,158,084	2,000,523	10,791,021	10,003,216	2,375,867[10]	None
Wheeling Steel Corp.	1,423,897	1,423,897	37,021,322	37,021,322	35,752,600[10]	35,752,600[10]
Sharon Steel Corp.	1,100,000	1,100,000	11,060,390	11,060,390	None	None
Kaiser Steel Corp.[1]	3,200,000	3,200,000	3,200,000	3,200,000	40,000,000	40,000,000
Crucible Steel Co. of America	631,985	574,362	15,871,611	14,359,044	29,810,600	30,527,200
Pittsburgh Steel Co.	1,182,651	1,091,915	11,017,188	8,819,355	24,194,300	24,194,300
Barium Steel Corp.	2,259,857	2,230,910	2,259,857	2,230,910	None	None
Allegheny Ludlum Steel Corp.	1,656,233	1,627,169	11,245,171	10,169,806	8,134,600	8,134,600
Granite City Steel Co.	1,379,045	1,278,162	17,238,068	15,980,775	12,137,600	10,226,500
Newport Steel Corp.[5]	1,078,547	1,078,547	1,078,547	1,078,547	None	None
Lukens Steel Co.[6]	317,976	317,976	3,179,760	3,179,760	None	None
Detroit Steel Corp.	2,371,586[23]	1,185,793	2,371,586	1,185,793	None	None
Alan Wood Steel Co.	606,377	594,107	6,063,770	5,941,070	6,525,000	6,525,000
Copperweld Steel Co.	514,864	514,864	2,574,320	2,574,320	4,486,000	1,065,000
McLouth Steel Corp.	951,680	951,680	2,379,200	2,379,200	None	None
Northwestern Steel & Wire Co.[7]	817,825	817,825	1,089,125	1,089,125	None	None
Rotary Electric Steel Co.	290,413	290,413	2,904,130	2,904,130	None	None
Keystone Steel & Wire Co.	1,875,000	1,875,000	2,604,167	2,604,167	None	None
Laclede Steel Co.	206,250	206,250	4,125,000	4,125,000	None	None
Continental Steel Corp.	501,361	501,361	7,018,789	7,018,789	None	None
Midvale Co.	600,000	600,000	10,574,621	10,574,621	None	None
Carpenter Steel Co.[8]	427,045[23]	395,955[23]	2,135,225[23]	1,979,775[23]	None	None
Total (or average)	97,175,782	95,473,413	$1,836,019,845	$1,827,608,680	$674,677,767	$662,656,309

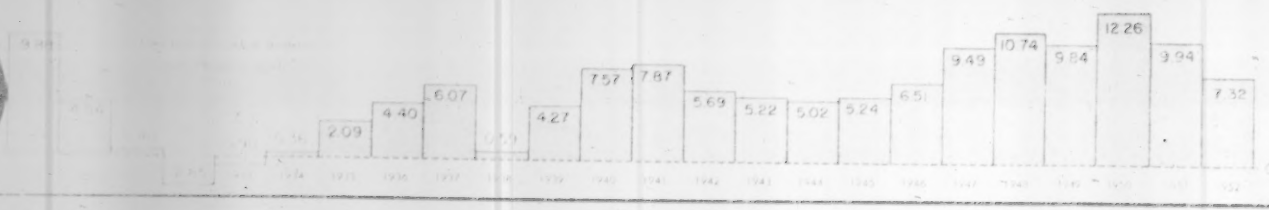
Boldface type is used under those columns in which figures from all 30 companies were not received. NA—Not Available.
(Denotes a credit. ‡ Denotes a deficit.
[1] Excluding amount maturing within one year.
[2] After federal income taxes.
[3] Including funded debt due within one year.
[4] Fiscal years ended June 30.
[5] Fiscal years ended Oct. 31.
[6] Fiscal years 52 weeks ended Oct. 25, 1952 and Oct. 27, 1951.
[7] Fiscal years ended July 31.



Net Income Per Ton Ingot Capacity 1952	Net Income Per Ton Ingot Capacity 1951	Capitalization Per Ton Ingot Capacity 1952	Capitalization Per Ton Ingot Capacity 1951	Average Number Employed 1952	Average Number Employed 1951	Total Payrolls 1952	Total Payrolls 1951	Funded Debt 1952	Funded Debt 1951	
$3.95	$5.32	$60.36	$62.09	294,263	301,328	$1,207,913,110	$1,214,995,660	$ 61,007,129	$ 54,879,636	9
5.41	6.66	72.50	68.37	155,533	154,589	634,213,866	621,091,687	298,314,000	220,314,000	5
4.59	6.12	63.90	62.77	69,411	69,545	290,139,198	298,650,689	165,681,915	111,209,110	2
3.30	6.40	84.68	95.57	43,558	43,622	182,285,000	181,293,000	111,652,000	115,128,000	2
7.36	9.53	75.50	74.64	29,102	29,933	111,957,529	110,555,562	55,000,000	10,000,000	2
4.63	7.21	80.81	79.14	25,600	26,111	108,664,549	111,295,009	93,100,000	52,000,000	2
6.64	7.74	79.68	74.87	28,232	28,157	132,218,609	127,162,039	80,519,915	59,096,995	2
6.08	9.47	88.75	77.57	26,658	26,327	119,128,381	119,750,847	113,996,500	67,250,000	1
2.85	6.60	65.31	63.41	17,127	16,857	67,120,096	61,688,239	18,500,000	22,357,500	
5.89	9.35	108.11	103.60	15,544	15,434	72,113,017	75,425,475	55,021,900	50,912,900	7
3.30	5.72	43.88	41.06	10,165	10,172	40,485,617	41,254,854	7,850,000	8,850,000	1
7.51	5.44	150.82	125.24	7,475	6,699	30,529,185	28,204,966	113,126,851	85,000,000	5
3.99	6.98	91.99	88.14	16,425	16,211	66,352,000	68,290,000	11,637,000	26,405,000	3
1.47	6.84	90.15	75.71	9,404	9,607	44,166,135	45,231,178	28,437,668	9,287,989	1
[15]	[15]	[15]	[15]	6,863	5,691	NA	NA	None	None	
6.68	10.81	119.54	116.75	15,211	15,058	60,253,316	65,250,310	30,860,000	22,170,000	2
6.92	7.14	110.35	79.52	1,362	1,433	18,268,752	18,787,273	28,009,375	12,063,125	2
2.69	3.10	31.43	30.80	1,421	3,837	13,710,690	14,422,243	953,030	1,806,280	
3.43	5.26	43.91	37.23	5,419	5,070	21,698,838	21,891,157	5,417,000	1,933,000	2
6.48	15.93	90.24	71.11	1,906	5,068	20,890,667	21,028,925	23,925,876	13,125,000	3
3.60	3.69	18.20	17.17	3,608	3,547	16,211,909	14,573,492	1,357,000	1,982,000	1
22	22	22	22	3,855	3,567	17,155,000	16,012,157	7,107,668[23]	1,638,000	1
7.69	9.37	69.85	58.46	1,818	1,853	NA	NA	11,250,000	11,593,779	2
1.61	9.08	24.12	38.18	2,170	2,391	9,376,016	9,970,864	None	None	
1.34	5.81	33.86	32.75	1,011	913	6,333,692	5,857,831	1,000,000	1,500,000	1
9.58	11.81	51.80	52.35	2,256	2,230	11,911,398	10,939,778	None	None	
5.20	6.82	42.33	39.74	2,822	2,796	12,306,745	11,403,677	1,758,516	1,392,512	1
3.75	3.88	51.01	41.84	2,708	2,663	11,626,712	11,199,536	3,000,000	None	1
3.66	5.90	54.74	63.16	2,950	2,460	13,076,598	10,171,169	None	None	
38.97	53.28	306.39	277.39	3,247	3,171	15,852,585	14,230,000	None	None	
$1.71	$6.52	$70.21	$68.81	315,497	319,286	$3,386,299,270	$3,419,907,611	$1,121,186,133	$1,025,646,856	$

Book Value Per Share of Common Stock 1952	Book Value Per Share of Common Stock 1951	Number of Common Stockholders 1952	Number of Common Stockholders 1951	Number of Preferred Stockholders 1952	Number of Preferred Stockholders 1951	Preferred Dividend Requirements 1952	Preferred Dividend Requirements 1951	Net Earnings Per Common Share 1952	Net Earnings Per Common Share 1951	Dividends Per Share on Preferred 1952	Dividends Per Share on Preferred 1951	
$68.01	$66.48	223,619	210,713	71,903	72,733	$25,219,677	$25,219,677	$1.54	$ 6.10	$7.00	$7.00	
86.22	81.42	83,756	78,670	22,318	22,792	6,537,209	6,537,209	8.80	10.43	7.00	7.00	
69.88	66.72	58,561	57,600	7,496	7,629	1,692,258	1,692,258	7.21	9.03	6.00	6.00	
52.51	51.40	38,210	35,882	6,359	6,305	1,468,000	1,468,000	2.91	1.76	5.00	5.00	
44.89	42.75	NA	NA	None	None	None	None	5.10	6.15	None	None	
91.56	87.72	15,471	14,439	None	None	None	None	6.84	9.15	None	None	
56.61	53.65	50,594	50,171	None	None	None	139,570	6.01	6.69	None	1.12½	
47.49	45.65	16,500	15,250	None	None	None	None	1.85	7.02	None	None	
37.71	37.09	11,565	10,416	228	None	54,438	None	2.61	4.89	1.160	0.881	
77.91	71.47	7,380	7,021	4,658	4,503	1,787,630	1,787,630	6.41	10.96	5.00	5.00	
54.70	54.04	8,200	8,080	None	None	None	None	1.65	8.06	None	None	
17.18	14.95	13,060	15,500	15,726	15,500	2,330,452	1,550,844	2.52	1.86	1.16	0.969	
83.11	84.87	3,577	3,390	5,772	7,043	1,490,961	1,530,844	6.13	11.89	5.00	5.00	
43.61	43.70	3,551	3,502	3,445	3,342	1,507,373	791,309	3.25	5.99	3.50	3.50	
8.67	8.22	8,453	8,163	None	None	None	None	1.22	1.87	None	None	
40.61	40.01	13,788	13,753	2,566	2,531	355,894	42,958	3.37	5.40	1.375	0.75	
28.50	27.40[25]	6,592	5,153	2,233	1,888	619,950	31,250	3.17	4.62	5.583	None	
19.76	18.45	5,785	5,937	None	None	None	None	1.76	2.65	None	None	
76.17	72.89	1,318	1,331	None	None	None	None	7.29	11.16	None	None	
15.02[26]	28.41	2,567	2,062	None	None	None	None	1.80[1]	8.87	None	None	
31.73	30.26	1,123	1,113	632	624	326,250	329,062	3.17	3.22	5.00	5.00	
35.56	33.71	3,806	3,716	1,127	116	51,539	51,470	1.38	3.11	2.70	2.70	
28.54	21.60	1,489	1,350	None	None	None	None	1.41	5.41	None	None	
16.90	15.10	920	920	None	None	None	None	1.13	3.56	None	None	
46.11	42.79	993	841	None	None	None	None	6.35	8.50	None	None	
11.74	11.17	4,075	3,866	None	None	None	None	2.17	2.52	None	None	
75.61	69.77	1,308	1,237	None	None	None	None	10.31	13.57	None	None	
34.13	32.88	2,652	2,805	None	None	None	None	2.95	3.05	None	None	
29.64	28.91	3,821	3,910	None	None	None	None	1.98	2.70	None	None	
52.71[28]	49.04[28]	3,205	2,950	None	None	None	None	6.71	9.17	None	None	
		596,682	569,777	141,163	145,339	$13,250,431	$11,175,081	$1.72	$6.31			

* Includes accelerated depreciation and/or amortization.
[9] After capital stock in treasury.
[10] After preferred stock in treasury.
[11] Stock dividend of 10 per cent in 1952, 16 per cent in 1951.
[12] Included within "Normal Federal Income Taxes" for year.
[13] Payment on prior preferred; additional payment on class A preferred $5.00 per share in 1952, $55.625 in 1951.
[14] Stock dividends of 8 per cent in 1952, 2 per cent in 1951.
[15] Not applicable to company's operations.
[16] Stock dividend of 2 per cent in 1952.



THIS SPECIAL REPORT is compiled
senting 94 per cent of the steel

Capacity	Average Number Employed 1952	1951	Total Payrolls 1952	1951	Funded Debt 1952	1951	Surplus 1952	1951	Total Capitalization 1952	1951	Provision For Depreciation, Depletio 1952	19
62.69	294,263	301,328	$1,207,913,110	$1,241,966,660	$ 61,007,129	$ 54,879,636	$905,511,315	$865,372,511	$2,197,124,771	$2,150,858,180	$176,938,167	$162,0
65.51	155,533	154,589	631,213,866	621,091,687	298,311,660	220,371,000	522,795,196	176,763,102	1,217,057,726	1,695,925,932	54,183,282	45,8
63.51	69,411	69,545	290,439,208	298,650,689	165,681,945	111,209,110	276,432,402	257,137,419	606,379,373	562,829,895	26,736,291	21,7
66.52	43,558	43,622	182,235,000	181,293,000	111,652,000	115,128,000	263,580,000	256,727,000	599,596,000	463,219,000	14,031,000	25,6
77.61	29,102	29,953	111,957,529	110,555,562	55,000,000	10,000,000	256,876,251	211,365,705	385,635,319	554,558,575	21,667,113	21,8
79.44	25,600	26,111	108,661,519	111,295,000	93,100,000	52,000,000	291,627,929	188,762,146	399,815,973	315,850,190	17,696,570	13,7
71.67	28,232	28,157	132,218,000	127,162,639	80,519,915	59,096,995	243,238,329	227,541,337	373,908,210	358,788,008	16,728,850	11,2
74.7	26,165	26,327	119,128,581	119,750,817	113,996,500	67,250,000	170,189,561	161,152,261	316,688,717	290,882,261	11,376,156	8,7
61.41	17,127	16,857	67,120,096	61,688,239	18,500,000	22,337,500	70,571,067	61,201,072	132,238,065	96,511,588	5,063,010	2,9
70.60	15,511	15,431	72,113,017	75,425,475	55,621,900	50,912,900	73,908,655	60,016,692	201,707,187	192,760,511	8,083,125	5,7
74.06	10,165	10,172	40,485,617	41,251,854	7,850,000	8,850,000	19,196,150	18,386,036	68,016,839	68,296,126	3,021,566	2,6
75.21	7,475	6,659	30,529,185	28,201,966	113,126,851	85,000,000	54,798,562	41,631,377	208,125,813	172,841,377	7,151,167	5,9
74.14	16,425	16,211	66,352,000	68,290,000	11,637,000	26,405,000	36,897,953	31,381,522	121,250,177	105,673,766	5,402,755	4,6
77.1	9,164	9,667	44,166,175	45,231,178	28,137,668	9,287,989	40,551,038	38,892,051	101,203,194	81,191,656	3,956,557	2,1
	6,863	5,691	NA	NA	None	None	17,328,858	16,111,783	19,588,715	18,315,693	1,291,150	1,0
110.25	15,211	15,058	60,253,316	65,250,310	30,860,000	22,170,000	56,659,279	54,936,367	166,269,053	95,110,773	6,951,113	3,1
70.2	1,367	1,133	18,268,752	18,787,273	28,069,375	12,003,125	22,068,390	19,045,970	79,435,153	57,256,870	2,386,151	2,2
70.60	1,421	5,837	13,710,040	11,422,243	953,630	1,806,280	20,278,310	18,820,455	22,269,887	21,766,253	1,059,150	9
72.21	5,419	5,070	21,698,828	21,891,157	5,417,000	1,955,000	21,010,651	19,995,761	29,647,111	25,156,521	1,261,360	1,1
74.11	1,566	5,068	20,890,627	21,028,325	23,925,876	13,425,000	33,250,801	32,540,511	59,567,263	47,151,807	1,971,665	1,6
74.7	3,608	3,647	16,211,999	11,573,492	1,357,000	1,982,000	13,176,896	12,033,947	30,122,666	29,181,987	2,882,810	2,5
	3,856	3,507	17,155,000	16,012,157	7,107,668	1,638,000	15,735,893	11,780,729	30,113,500	20,058,019	1,023,031	8
70.16	1,818	1,853	NA	NA	11,250,000	11,593,779	21,785,806	18,178,811	38,115,096	32,151,820	3,506,061	3,1
73	2,170	2,391	9,576,016	9,970,861	None	None	9,732,827	8,261,712	13,821,952	12,350,837	1,553,176	5
	1,011	913	6,323,692	5,837,851	1,000,000	1,500,000	10,486,788	9,511,963	14,390,918	12,919,063	1,339,250	9
72.5	2,256	2,230	11,941,398	10,939,778	None	None	19,109,386	18,236,151	22,013,553	20,910,321	790,125	5
74.1	2,822	2,796	12,306,745	11,103,677	1,758,546	1,902,512	11,169,777	10,265,156	17,353,323	16,202,695	1,113,709	8
71.51	2,768	2,663	11,626,712	11,199,536	3,000,000	None	10,092,262	9,167,616	20,111,151	16,186,135	605,021	5
66.16	2,950	2,481	13,676,598	10,171,169	None	None	7,211,690	6,772,076	17,786,311	17,316,077	597,351	5
72.39	3,247	3,171	15,852,585	11,230,000	None	None	20,219,565	18,175,771	22,511,877	20,280,848	511,705	4
70.24	68.81	815,197	819,286	$3,386,298,220	$3,119,907,611	$1,121,186,133	$1,025,616,856	$3,175,131,119	$3,261,880,184	$7,410,193,827	$6,782,520,511	$499,258,209	$383,3

Number of Stockholders 1951	Number of Preferred Stockholders 1952	1951	Preferred Dividend Requirements 1952	1951	Net Earnings Per Common Share 1952	1951	Dividends Per Share on Preferred 1952	1951	Dividends Per Share on Common 1952	1951	Normal Federal Income Taxes 1952	1951	Federal Excess Profits Tax 1952	1951
716,413	71,967	72,733	$25,219,677	$25,219,677	$1.54	$ 6.10	$7.00	$7.00	$3.00	$3.00	$132,000,000	$208,000,000	$15,000,000	$90,000,000
18,670	22,338	22,792	6,537,209	6,537,209	8.80	10.43	7.00	7.00	1.00	1.00	80,200,000	136,000,000	14,200,000	26,000,000
7,600	7,396	7,629	1,692,258	1,692,258	7.21	9.03	6.00	6.00	1.00	1.00	42,500,000	88,500,000	300,000	20,000,000
5,882	6,359	6,304	1,468,000	1,468,000	2.91	1.76	5.00	5.00	1.80	1.80	3,068,000	11,613,000	8,926,000	9,696,000
NA	None	None	None	None	5.10	6.15	None	None	3.00	3.00	41,330,000	74,550,000	650,000	20,450,000
14,129	None	None	None	None	6.81	9.15	None	None	3.00	3.00	20,380,000	34,372,000	2,490,000	1,320,000
20,171	None	None	None	139,570	6.01	6.69	None	1.125	3.00	3.00	38,577,239	81,100,500	4,719,987	15,040,702
12,256	None	None	None	None	4.85	7.02	None	None	3.00	3.50	18,333,000	42,030,000	5,216,000	10,480,000
10,116	228	None	51,138	None	2.61	4.89	1.160	0.881	1.50	1.875	7,598,800	14,645,800	862,700	1,628,200
7,023	1,658	4,503	1,787,630	1,787,630	6.41	10.96	5.00	5.00	3.00	3.00	9,611,000	25,817,000	2,136,000	7,835,000
8,000	None	None	None	None	1.65	8.06	None	None	1.00	3.50	3,600,000	13,500,000	850,000	1,500,000
16,500	14,726	15,500	2,330,452	1,550,844	2.52	1.86	1.16	0.969	0.25	None	12,848,440	6,925,045	None	None
7,200	5,772	7,043	1,490,961	1,530,844	6.13	11.89	5.00	5.00	[11]	[11]	2,577,506	13,111,779	[11]	1,681,651
3,392	3,115	3,312	1,507,377	291,309	3.25	5.99	5.50[12]	5.50[12]	[11]	[11]	1,967,000	11,165,000	560,000*	3,800,000
8,103	None	None	None	None	1.22	1.87	None	None	0.50	0.40	5,086,265	6,780,671	1,480,000	1,885,000
13,763	2,566	2,531	355,891	12,958	3.37	5.10	1.375	0.53	2.00[13]	2.50	1,520,000	15,650,000	1,620,000*	5,140,000
2,153	2,237	1,888	619,950	31,250	3.17	1.62	5.08[14]	None	1.10[15]	2.20	3,917,000	6,535,000	1,284,268*	1,145,000
5,057	None	None	None	None	1.76	2.93	None	None	0.15	0.70	1,500,000	3,043,196	511,600*	840,000
1,053	None	None	None	None	7.29	11.46	None	None	1.00	4.00	3,288,361	6,606,000	312,801	2,265,500
2,092	None	None	None	None	1.80[16]	8.87	None	None	1.60	2.00	1,597,235	16,332,229	80,000	5,180,000
1,113	632	624	326,250	329,962	3.17	3.32	5.00	5.00	1.40	1.40	2,550,000	6,520,000	75,000*	602,000
1,716	1,127	416	51,339	51,470	1.58	5.11	2.50	2.50	2.00	2.30	2,367,500	4,760,000	6,000	1,156,000
1,700	None	None	None	None	1.41	5.41	None	None	None	None	7,115,000	8,612,000	2,455,000	2,930,000
929	None	None	None	None	1.13	3.56	None	None	None	None	65,000*	2,883,700	930,000*	705,000
811	None	None	None	None	6.35	8.55	None	None	3.00	2.75	2,401,000	3,765,000	410,000	1,260,000
2,667	None	None	None	None	2.17	2.52	None	None	1.60	1.60	5,156,219	5,646,435	960,129	1,084,405
1,257	None	None	None	None	10.31	13.57	None	None	1.50	5.20	2,657,000	1,090,000	107,000	885,000
2,805	None	None	None	None	2.95	3.05	None	None	1.70	2.05	1,880,000	1,150,000	[11]	[11]
1,040	None	None	None	None	1.98	2.70	None	None	1.25	1.00	2,218,000	500,000	None	None
2,950	None	None	None	None	6.71	9.17	None	None	3.00[17]	1.50[18]	5,334,316	1,900,381	1,716,557	1,503,952
596,687	569,777	111,463	115,339	$13,250,131	$11,175,081	$1.72	$6.31				$175,391,941	$863,871,823	$41,378,331	$257,808,410

[1] Payment on prior preferred; additional payment on class A preferred $5.00 per share in 1952, $55.625 in 1951.
[2] Stock dividends 2.8 per cent in 1952, 2 per cent in 1951.
[3] Not applicable to company's operations.
[4] Stock dividend 2 per cent in 1952.
[11] Common stock split two-for-one Mar. 15, 1951.
[12] Covers period from date of incorporation Dec. 31, 1951, to Dec. 15, 1952. Additional dividend of $5.865 per share on series B 5.5 per cent preferred from date of issuance Apr. 11, 1952 to Dec. 15, 1952.

Compiled by

STEEL
A PENTON PUBLICATION

April 20, 1953

s compiled from data from 30 producers repre-
the steelmaking capacity in the United States

Financial Analysis

OF THE STEEL INDUSTRY FOR 1952

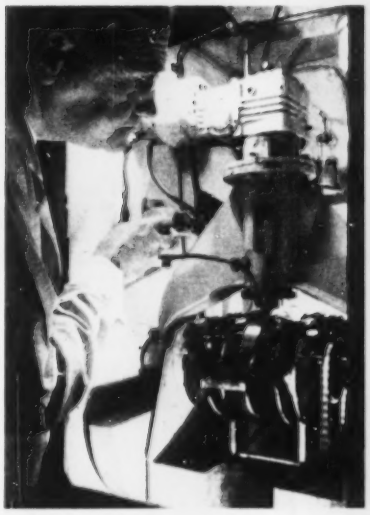
Provision For ... 1951	Total Income Before Dividends and Interest on Bonds[1] 1952	1951	Total Income—Per Cent of Capitalization 1952	1951	Net Sales 1952	1951	Net Profit—Per Cent of Net Sales 1952	1951	Net Income Before Dividends 1952	1951	
$162,091,475	$115,519,811	$186,329,413	6.62	8.66	$2,137,397,336	$3,524,121,226	1.58	5.23	$115,6[illegible]	$[illegible]	United States Steel Corp.
45,891,869	98,662,515	112,197,080	8.10	10.26	1,701,541,383	1,799,506,346	5.31	5.92	90,369,771	106,531,253	Bethlehem Steel Corp.
21,799,375	18,765,610	57,693,828	8.01	10.25	918,447,135	1,052,715,386	1.82	5.22	11,274,053	54,921,511	Republic Steel Corp.
25,695,000	23,112,000	33,700,000	4.69	7.28	495,401,000	564,330,000	3.93	5.19	19,482,000	30,998,000	Jones & Laughlin Steel Corp.
21,898,168	10,692,327	46,514,236	10.57	13.13	548,625,817	618,461,108	6.85	7.22	37,558,417	44,287,085	National Steel Corp.
13,762,863	21,801,991	31,890,881	6.20	9.85	439,623,183	489,505,162	5.21	6.25	22,915,822	30,611,201	Youngstown Sheet & Tube Co.
11,228,709	33,915,802	36,869,765	9.02	10.88	518,575,218	534,831,687	6.04	6.51	31,317,861	35,001,187	Armco Steel Corp.
8,753,216	26,928,021	36,310,738	7.77	12.48	460,451,935	521,419,655	5.16	6.60	23,756,218	34,598,586	Inland Steel Co.
3,913,896	7,652,122	10,632,197	5.32	11.01	195,757,164	191,111,112	2.94	5.25	5,761,965	10,011,728	Colorado Fuel & Iron Corp.
6,501,595	12,850,260	15,088,866	6.35	9.91	180,285,277	229,012,621	6.07	7.50	10,950,250	17,292,959	Wheeling Steel Corp.
2,903,189	5,708,562	9,137,596	7.94	13.38	132,376,126	169,961,946	3.87	5.21	5,120,111	8,861,187	Sharon Steel Corp.
5,945,760	13,926,012	10,120,016	6.69	6.02	117,925,049	100,171,175	8.81	7.18	10,390,306	7,510,560	Kaiser Steel Corp.
1,566,777	6,762,760	9,290,877	5.11	8.79	180,266,000	202,868,727	2.99	4.12	5,391,520	8,363,225	Crucible Steel Co. of America
2,121,501	5,722,786	7,180,059	5.40	9.21	130,158,219	150,162,944	3.96	4.87	5,150,051	7,331,599	Pittsburgh Steel Co.
1,027,884	2,740,650	4,161,177	11.02	22.70	99,052,028	91,612,638	2.77	4.54	2,746,650	4,161,177	Barium Steel Corp.
3,179,703	5,910,321	8,831,110	5.59	9.26	190,060,165	229,282,711	3.13	3.85	5,910,321	8,831,110	Allegheny Ludlum Steel Corp.
2,226,816	5,869,188	5,735,749	7.39	10.02	74,587,639	86,603,279	6.68	5.93	4,985,964	5,142,529	Granite City Steel Co.
986,221	1,971,099[2]	2,292,100	8.85	10.56	50,502,854	59,521,565	3.77	3.68	1,902,269	2,188,023	Newport Steel Corp.
1,749,812	2,573,261	3,567,346	8.68	14.59	69,616,358	80,516,418	3.33	4.11	2,316,291	3,549,567	Lukens Steel Co.
1,627,721	5,373,804	11,069,211	8.92	23.48	87,421,483	113,747,041	4.89	9.21	4,276,666	10,514,896	Detroit Steel Corp.
2,501,911	2,504,414	2,591,771	8.31	8.79	60,479,849	58,761,602	3.72	3.92	2,251,073	2,303,720	Alan Wood Steel Co.
826,854	2,377,416	2,775,165	7.89	13.81	71,612,488	76,185,026	3.22	3.55	2,304,587	2,705,165	Copperweld Steel Co.
3,128,878	4,227,861	5,151,038	11.01	16.02	NA	NA	NA	NA	4,227,861	5,151,038	McLouth Steel Corp.
566,211	921,659	2,915,271	6.69	23.60	36,571,011	42,981,692	2.53	6.78	921,659	2,915,271	Northwestern Steel & Wire Co.
680,602	1,813,661	2,182,974	12.81	17.81	37,120,265	36,711,531	1.97	6.10	1,813,661	2,182,974	Rotary Electric Steel Co.
520,898	1,073,232	1,721,286	18.50	22.56	18,939,590	41,406,154	8.32	10.64	1,073,232	1,721,286	Keystone Steel & Wire Co.
870,106	2,205,628	2,863,032	12.71	17.57	47,545,026	47,657,001	1.49	5.87	2,132,746	2,797,998	Lacledo Steel Co.
922,561	1,550,456	1,550,371	7.49	9.28	35,716,970	39,866,978	1.11	3.84	1,177,030	1,530,371	Continental Steel Corp.
577,004	1,188,599	1,619,925	6.68	9.31	30,039,172	23,797,331	3.96	6.81	1,188,599	1,619,925	Michigan Steel Corp.
292,767	2,753,152	3,911,567	12.72	19.21	17,680,029	41,112,211	6.01	8.87	2,863,152	3,911,567	Carpenter Steel Co.
$261,154,279	$327,361,572	$673,916,708	7.32	9.94	$10,113,806,102	$11,228,808,095	1.91	5.71	$502,111,737	$636,185,887	Total for averages

Total Assets 1951	1952	1951	Current Assets 1952	1951	Current Liabilities 1952	1951	Ratio of Current Assets to Current Liabilities 1952	1951	Working Capital 1952	1951	
000,000	$2,588,147,746	$2,446,678,862	$1,010,707,373	$1,212,720,207	$684,151,997	$877,802,623	1.48 to 1	1.38 to 1	$326,555,376	$334,917,584	United States Steel Corp.
000,000	1,610,973,197	1,511,687,949	851,801,104	873,130,162	352,120,381	408,761,987	2.42 to 1	2.14 to 1	199,680,723	161,368,175	Bethlehem Steel Corp.
000,000	757,780,521	621,682,852	288,523,212	271,735,190	133,133,112	110,453,613	2.17 to 1	2.46 to 1	155,199,100	161,281,577	Republic Steel Corp.
696,000	838,911,000	820,120,000	168,806,000	219,534,000	75,345,000	125,987,000	2.24 to 1	1.74 to 1	93,461,000	93,547,000	Jones & Laughlin Steel Corp.
450,000	406,578,152	452,884,792	218,748,018	223,680,937	73,626,979	64,855,385	2.97 to 1	3.45 to 1	145,121,039	158,825,552	National Steel Corp.
320,000	479,211,935	430,097,395	239,455,211	260,625,990	68,667,688	83,312,119	3.49 to 1	3.13 to 1	170,787,523	177,313,871	Youngstown Sheet & Tube Co.
040,702	464,050,153	446,011,518	204,787,795	189,779,933	80,814,075	70,766,626	2.53 to 1	2.68 to 1	123,973,720	119,013,307	Armco Steel Corp.
490,000	400,814,562	481,163,351	193,657,506	193,770,730	45,261,977	81,377,610	4.27 to 1	2.38 to 1	148,395,529	112,393,120	Inland Steel Co.
628,200	176,157,962	139,961,591	69,561,385	67,917,406	38,047,053	38,032,232	1.83 to 1	1.79 to 1	31,514,332	29,885,174	Colorado Fuel & Iron Corp.
815,000	228,320,435	214,521,121	95,952,873	96,012,927	19,610,825	17,218,229	4.89 to 1	5.57 to 1	76,342,048	78,761,698	Wheeling Steel Corp.
580,000	85,151,791	91,757,000	72,841,761	59,768,533	16,921,951	21,500,580	3.12 to 1	2.78 to 1	55,919,807	38,267,953	Sharon Steel Corp.
550m	257,002,551	190,359,102	62,843,472	41,717,458	28,876,511	17,322,576	2.18 to 1	2.41 to 1	33,966,961	24,394,882	Kaiser Steel Corp.
084,651	137,625,710	131,987,067	68,791,669	59,926,274	30,310,862	23,669,530	2.27 to 1	2.53 to 1	38,480,807	36,256,744	Crucible Steel Co. of America
800,000	128,751,121	112,805,642	51,949,038	63,932,306	24,547,927	31,259,617	2.12 to 1	2.05 to 1	27,402,011	32,672,653	Pittsburgh Steel Co.
885,000	50,202,097	43,239,784	30,370,135	26,024,526	23,638,917	19,067,101	1.28 to 1	1.36 to 1	6,731,218	6,957,425	Barium Steel Corp.
110,000	110,597,971	128,096,063	65,635,039	63,767,592	51,899,208	28,580,582	2.05 to 1	2.23 to 1	13,735,831	35,187,010	Allegheny Ludlum Steel Corp.
145,000	101,697,110	77,676,028	34,326,718	40,639,211	19,197,597	19,618,794	1.79 to 1	2.07 to 1	15,129,121	20,590,450	Granite City Steel Co.
810,000	31,117,525	32,790,803	16,759,755	18,562,456	7,117,639	9,094,423	2.35 to 1	2.04 to 1	9,642,116	9,468,027	Newport Steel Corp.
205,560	11,626,667	13,911,091	28,916,767	32,592,784	14,901,873	18,694,718	1.94 to 1	1.74 to 1	14,014,894	13,898,066	Lukens Steel Co.
180,000	78,631,656	81,279,591	25,878,132	48,751,722	19,127,433	34,128,084	1.35 to 1	1.43 to 1	6,750,699	14,623,638	Detroit Steel Corp.
662,000	30,100,084	30,320,681	15,071,214	13,971,773	7,878,654	8,969,341	1.91 to 1	1.56 to 1	7,105,560	5,005,432	Alan Wood Steel Co.
150,000	41,951,821[3]	29,183,826	25,402,791[3]	18,454,317	11,430,798[3]	8,841,547	2.22 to 1	2.09 to 1	13,971,993[3]	9,612,770	Copperweld Steel Co.
930,000	52,410,503	53,586,769	29,489,191	29,229,030	16,004,607	21,714,948	1.84 to 1	1.35 to 1	13,484,584	7,514,082	McLouth Steel Corp.
765,000	30,439,187	25,166,255	8,335,296	8,980,103	10,833,542	8,923,508	0.77 to 1	1.01 to 1	2,498,246[4]	56,595	Northwestern Steel & Wire Co.
260,000	17,679,959	16,131,111	7,663,709	6,204,363	3,249,011	2,212,018	2.37 to 1	2.80 to 1	4,414,698	3,992,345	Rotary Electric Steel Co.
084,405	26,784,205	23,561,289[5]	12,231,121	9,715,787	4,770,652	2,620,968	2.56 to 1	3.71 to 1	7,460,469	7,094,819	Keystone Steel & Wire Co.
885,000	23,265,215	22,027,116	13,243,625	12,548,541	5,611,892	5,434,418	2.36 to 1	2.31 to 1	7,631,733	7,114,123	Lacledo Steel Co.
[illegible]	25,490,734	21,396,048	11,420,598	9,465,273	2,613,659	4,159,256	4.37 to 1	2.28 to 1	8,806,939	5,306,017	Continental Steel Corp.
None	23,561,031	21,462,339	16,211,164	14,040,438	5,347,959	3,659,716	3.03 to 1	3.84 to 1	10,863,205	10,380,722	Michigan Steel Corp.
503,952	55,583,115	50,756,008	25,956,819	21,474,564	13,065,585	10,550,888	1.99 to 1	2.03 to 1	12,891,234	11,123,676	Carpenter Steel Co.
808,410	$9,869,581,568	$9,452,448,950	$3,945,175,551	$4,214,677,560	$1,868,188,401	$2,178,450,847	2.11 to 1	1.93 to 1	$2,076,987,150	$2,036,226,713	Total for all

[1] Stock dividend of 3 per cent in 1952.
[2] Includes earnings from other than steel operations.
[3] Common stock split two-for-one Feb. 15, 1952.
[4] Comparisons would be misleading as company's operations include a wire and cable division with no steel ingot capacity.
[5] Represents ingot capacity of steel plant only.
[6] Including subsidiary not in acquired December 1952.
[7] To be issued 2/3 shares with a valuation of $1.00 in 1952 19,843 shares with a valuation of $20.215 in 1951.
[8] Based in 1952 on 427,645 shares in 1951 on 415,136 shares.
[9] Difference between two years due to issue of 30,000 shares $1.00 per share paid out of surplus in 1952. In addition 5 per cent stock dividend in 1952.

GMOODIE Means Co-operation

General Motors South African Ltd., Port Elizabeth, South Africa, (left) where GMOODIE was first used. The wear-test machine at right gave long-time wear results in less than 19 hours testing



GMOODIE is the name of a new stamping die alloy, developed by GM research for overseas operations. How it came into being is a case study in co-operation

INTERNATIONAL co-operation is paying off for General Motors Corp.

A typical example is this problem dropped into the laps of GM's research metallurgists by General Motors Overseas Operations Division: GMOO had been using a commercial zinc alloy for stamping dies, but increased production turned up the need for die materials which would hold up under longer runs.

Quick Proof—GM Research Laboratories Division went to work on the problem. With the aid of such equipment as the wear-testing machine pictured above, a zinc alloy was found which had four times the die life of the former die material. Only small samples of the various alloys under consideration were needed (1⅛" x ⅝" x 3/16") for the wear tests which usually ran about 18½ hours. It was on the basis of such laboratory tests and subsequent field tests that GMOODIE, the new zinc alloy, proved itself. A die made of the new alloy was still in good shape after 90,000 garnish molding parts were drawn.

Some two years ago, the first GMOODIE metal was poured overseas, in General Motors South African plant. Soon afterward it was introduced in the GM plant in Brazil. Both operations, as well as the GM overseas experimental shop foundry in Detroit, have made a number of tools from GMOODIE which have been used to stamp out Frigidaire parts in South Africa, England, France, Brazil, Mexico and New Zealand and truck cab parts in South Africa, Brazil and Mexico.

Benefits Increase—Such co-operation pays handsome benefits. Not the least of which is the creation of more income abroad as a result of GM's activities with which these nations can buy more and more U.S. goods.

At the present time GM has manufacturing and assembling plants in 19 countries: Argentina, Australia, Belgium, Brazil, Denmark, France, Germany, Great Britain, India, Indonesia, Mexico, New Zealand, Pakistan, Peru, South Africa, Sweden, Switzerland, Uruguay and Venezuela. And GM employs about 68,000 persons, 98 per cent of whom are locally trained nationals. Sales of foreign-made GM cars and trucks increased 8 per cent in 1952 over 1951.

In this operation, international co-operation is not an idle phrase—it's a necessity.

U.K. Steel Outlook Mixed

The British steelmaking picture is a combination of feast and famine. Steel production is now running at an annual rate of 18,325,000 tons, or 2 million tons higher than a year ago. The weekly average of 352,400 tons in February was the highest in the history of the industry.

Steel scrap is still critically short, however, especially in South Wales where several furnaces are idle for lack of scrap. Those which are in operation are using a heavy pig iron diet. Imports of scrap are so small they are of little help in overcoming the shortage.

Germany Passes Prewar Output

For the first time since World War II, iron and steel production in Germany was higher in 1952 than in prewar years. Tonnages in thousands of net tons ran as follows:

	1936	1951	1952
Pig Iron	13,839	11,767	14,165
Steel Ingots	16,309	14,857	17,387

Incoming orders of domestic German steel consumers have been shrinking drastically over recent weeks. Index of incoming orders of capital goods was 163 in January, 1953, compared to 190 in January, 1952, and 209 in November, 1952. In machinery alone, the index of incoming orders was 148 in January, 1953, compared to 219 in January, 1952.

More Iron Ore from Venezuela

Iron ore production in Venezuela reached 1,969,802 tons in 1952. That is an increase of 700,000 tons over the 1951 production, says the Venezuelan Information Service, Washington.

All the output at present comes from the iron mines of El Pao, being worked by the Iron Mines Co. of Venezuela (Bethlehem Steel Corp.). But, Orinoco Mining Co., a U. S. Steel subsidiary, expects to start shipping iron ore northward early next year from Cerro Bolivar, Venezuela's "iron mountain."

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

TIME FOR SPRING CLEANING
mismanagement overtakes government bureaus

Can government agencies be run on a businesslike basis? The new administration discovers that cleaning up Washington is a mammoth task

ACCUMULATING testimony on slipshod methods of government operation poses the problem of improving the situation.

Robert A. Lovett, former defense secretary, testifying about difficulties he encountered in trying to investigate the ammunition situation, declared, "The Army, and specifically the Ordnance Corps, is so complicated, obsolete and time-wasting and its accounting system so inaccurate that it is extremely difficult to obtain the facts." Mr. Lovett admitted that he could not discover who was to blame for the ammunition shortage.

Complete Confusion — Former Secretary of the Army Frank Pace Jr. testified that he never knew about the ammunition problem in Korea; General Van Fleet's complaints didn't get as far as his desk.

Sen. Harry Byrd (Dem., Va.) states that his joint committee seeking to reduce nonessential federal expenditures was forced to abandon its monthly report on the number of individuals on the federal payroll because it can't get accurate information.

Worthless Figures — The new postmaster general, Arthur E. Summerfield, says post office employment statistics are so inaccurate as to be valueless. Meanwhile the Defense department reports that in addition to 1.25 million employees previously listed, it employs 250,000 unreported civilians overseas.

Civil Service authorities estimate federal employees number about 2.5 million, but they say some reports are so inaccurate or inadequate as to be misleading.

Gathering Chorus — The complaints continue throughout government agencies, as can be attested by anyone who has tried to get a breakdown of government expenditures from the Bureau of the Budget — of all places!

Government has become so ponderous and complicated, so loaded down with obsolete methods, with responsibilities distributed in so many ways, that businessmen now in Washington are easily discouraged in efforts to bring efficiency into government. It is even difficult for them to find out what is going on in their own departments and agencies. Few in Washington envy Charles Wilson's job in the Defense department.

Statistical Lag . . .

The government is too slow to make business statistics available, says Secretary of Commerce Sinclair Weeks. There is too much lag in issuing Facts for Industry statistics, census reports and similar data. For example, February statistics for sales of mechanical stokers were published Apr. 9 in comparatively fast time for government bureaus.

Mr. Weeks admits that business statistics may have some historical value, but he thinks they are needed chiefly for intelligent planning of business policies. He is trying to speed up the whole operation so that statistics will be issued while they still are representative of the current situation.

Cuts for Small Business? . . .

A good example of what keeps businessmen in the government struggling against frustration is afforded by a letter sent to the secretary of defense by the Small Defense Plants Administration.

Citing the statutory duty of his agency to promote the use of small business in the defense program, Yngvar Brynildssen protested Charles Wilson's proposal to depart from the policy of broadening the industrial mobilization base and, instead, concentrating defense production in fewer places.

Such a course, said Mr. Brynildssen, would reduce defense opportunities open to small business. As a result, Mr. Wilson's attempt to reduce his budget by this approach is in for trouble. A majority of congressmen wants a maximum of opportunities for small business to engage in defense production programs.

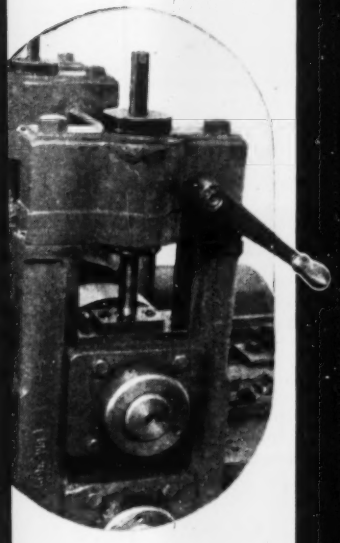
Hospitals for UMW . . .

The United Mine Workers Welfare Retirement Fund has signed a contract with J. A. Jones Construction Co., Charlotte, N. C. to build ten hospitals in coal mining communities in Kentucky and West Virginia which presently do not have hospital facilities available to miners.

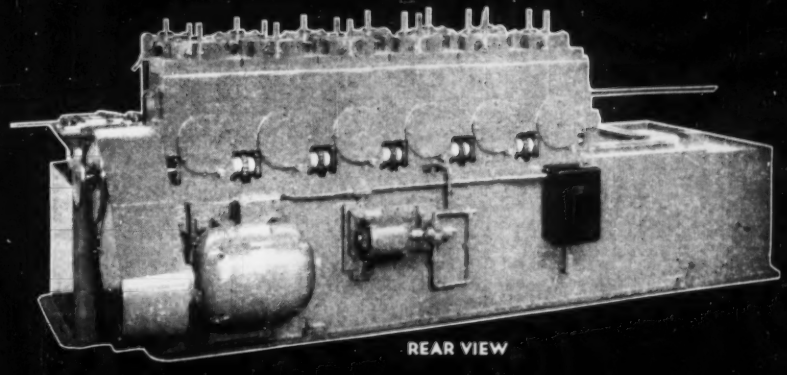
McKAY

ROLL FORMING MACHINES FOR PRODUCING SHAPES FROM FLAT STRIP.

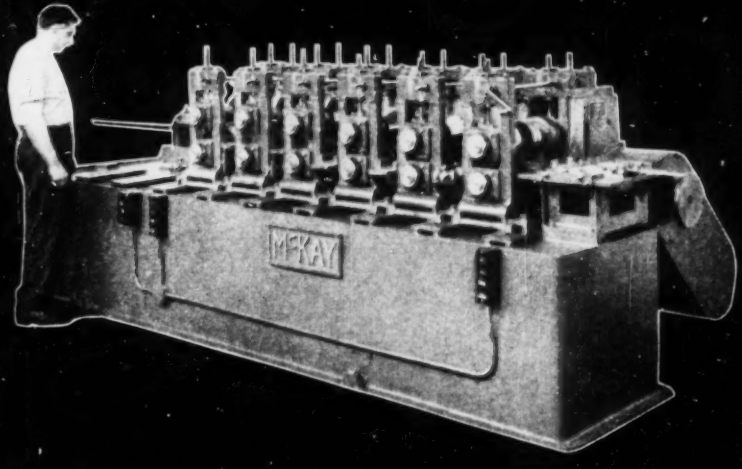
There's a McKAY Machine to Make Every Section



McKAY MICROMETER (patented)



REAR VIEW



STANDARD FEATURES

MICROMETER ADJUSTMENT. All pressure points on top shaft controlled by simple crank motion, through worm and gear reduction. Top shaft is ALWAYS PARALLEL. Micrometer dial furnishes visible check on roll pressures.

TYPICAL RUGGED McKAY CONSTRUCTION. Standardized units, choice of gearing, anti-friction bearings throughout, all gears between bearings, NOT OVERHUNG.

INTERCHANGEABLE GUIDING EQUIPMENT, easily adjusted, quickly removable.

MINIMUM CHANGEOVER TIME. All units engineered to allow complete roll change in shortest possible time.

LOW MAINTENANCE COST: All of the foregoing features, plus precision workmanship and up to the minute engineering, are a guarantee of low maintenance.

OPTIONAL FEATURES

BASE EXTENSION. Permits increasing the number of roll passes to meet future requirements, by the addition of standard housing units at a later date.

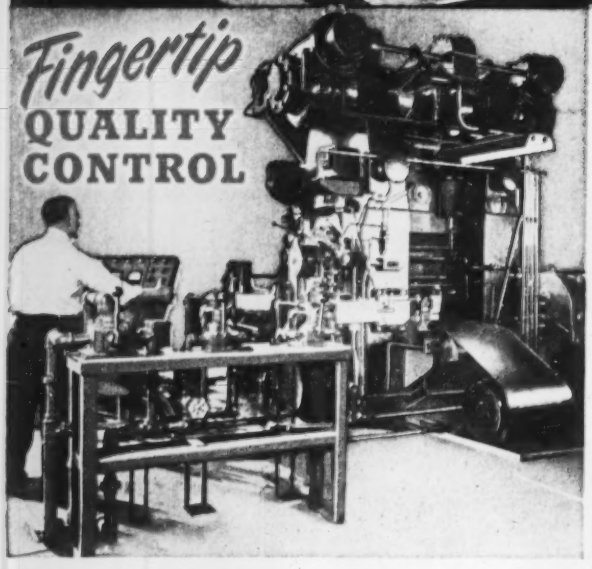
MOTOR DRIVEN COOLANT PUMP. Supplies flushing fluid to the rolls at each roll pass, and provides a rust preventative treatment to the formed strip. Tanks for fluid are built integral with the welded steel base

ENGINEERS AND MANUFACTURERS OF **TUBE MILLS** USING
ELECTRIC RESISTANCE WELD
OXY-ACETYLENE WELD
ATOMIC HYDROGEN WELD

The **McKAY MACHINE** Company
ENGINEERS AND MANUFACTURERS OF SHEET, TIN, AND STRIP MILL EQUIPMENT
YOUNGSTOWN, OHIO

PERFORMANCE RUGGEDNESS PRECISION AND SAFETY.

Complete Steel Service* from One Source



This completely modern plant with latest type equipment for *rolling* strip and processing sheet and strip steel is your ideal source for:

- *Warehouse stocks in sheets, plates, coils, cut lengths . . . All tempers and finishes.
- *Steel strip in coils and cut lengths . . . restricted tolerances, all tempers and finishes.
- *Roller leveling, pickling, annealing, shearing, slitting and skin rolling.

PRODUCTION STEEL STRIP CORPORATION supplements our regular warehouse service with custom steel at mill prices. This new, 4-high, reversing type cold strip mill with its modern, electronically operated *fingertip* quality control affords unusual flexibility in supplying steel strip to your exact specifications. Thickness .025 to .125 in all tempers and either bright or satin finish, can be processed to your exact width in coil or cut lengths.

PRODUCTION STEEL

WAREHOUSES:

PRODUCTION STEEL COMPANY
20001 Sherwood Ave., Detroit 34, Mich.
Phone TWinbrook 3-5000

PRODUCTION STEEL STRIP CORP.
20001 Sherwood Ave., Detroit 34, Mich.
Phone TWinbrook 3-5000

PRODUCTION STEEL COIL, INC.
20001 Sherwood Ave., Detroit 34, Mich.
Phone TWinbrook 3-5000

PRODUCTION STEEL CO. OF ILLINOIS
2801 Roosevelt Rd., Broadview, Ill. (Chicago)
Phone MAnsfield 6-4242

SENECA STEEL SERVICE, INC.
1050 Military Rd., Buffalo 17, N. Y.
Phone Riverside 7920

SALES OFFICES:

PRODUCTION STEEL COMPANY
1002 E. 81st Street, Indianapolis, Ind.
Phone Broadway 3468
E. W. Richardson, Sales Representative

PRODUCTION STEEL COMPANY
548 W. Mechanic Street, Jackson, Mich.
Phone 2-9097
Glenn Christman, Sales Representative

PRODUCTION STEEL CO. OF ILLINOIS
2521 West Dixon St., Milwaukee, Wisc.
Phone: BLuemound 8-8323
Warren P. Bidwell, Sales Representative

SENECA STEEL SERVICE, INC.
739 Westchester Ave., Rochester, N. Y.
Phone Culver 7480
W. J. Knoll, Sales Representative

SENECA STEEL SERVICE, INC.
1347 Northcliffe Rd., Syracuse, N. Y.
Phone 73-5722
Dean Hethington, Sales Representative

SENECA STEEL SERVICE, INC.
347 Price Street, Jamestown, N. Y.
Phone 5759
S. N. Olmsted, Jr., Sales Representative

PRODUCTION STEEL COMPANY
1040 High View Lane, Green Bay, Wisc.
Phone Howard 7407
Tony Canadeo, Sales Representative

U. S. Steel

Foreman's Importance Grows with Industry

ARE YOU making the most of your foreman? Are you taking advantage of the growing importance of his job? A survey made by Associated Industries of Cleveland indicates that you may be neglecting an important point in company management.

AIC asked 260 Cleveland firms if they had a program in 1951 to train foremen. Some 88 companies had such programs, but 172 did not. In 1952 a second survey disclosed that 106 firms had similar projects and 168 did not.

Missing Opportunities—The survey showed that small firms are not devoting enough time to careful selection and training of supervisory men. In 1952, only 21 companies with fewer than 100 workers had foreman training programs and 81 did not. By contrast, 45 companies employing more than 500 workers had training programs and 14 did not.

If you don't spare time or resources to embark on a thoroughgoing program, there is danger that your foreman may waste the company's money or stir up resentment against management. At the least, he will be poorly integrated into management's point of view.

Getting Results— A STEEL survey shows that, in the best run companies, today's foreman is better equipped to manage his workers than his predecessor was 15 years ago. He has a firmer grasp of principles of employee relations, and he feels that he is a part of management and not a "gang boss."

Growing importance of today's foreman is developing most rapidly in large companies. As firms expand, management tends to become more removed from the worker. Since the foreman continues to have intimate personal contact with workers, he must bridge this labor-management gap.

Personal Qualities—But how can a foreman be trained to fill a bigger role in management? "First a foreman must be a leader of men," Norton Co., Worcester, Mass., remarks. "He does not have to be expert at every operation in his area. If he can get people working for him and co-ordinate their efforts, he will do a good job."

"In picking foremen we start with every employee in the plant, then narrow the list to about 30 by testing and interviews," spokesmen of Allegheny Ludlum Steel Corp., Pittsburgh, say.

"The best ten are taught the functions of each division in our company. Then we teach them actual management on a job by having them spend several weeks at the elbow of our best foremen. Our eight-month program includes classroom theory on labor relations and basic economics. As a result of this project we are getting better foremen than we ever had."

Pay Scale—Is your foreman's salary commensurate with his importance? The National Foremen's Institute Inc., New London, Conn., says the average monthly salary of first class foremen in all industries is $466. Companies employing less than 100 workers pay foremen an average $419, while firms with more than 1000 workers reward their foremen with an average $482.

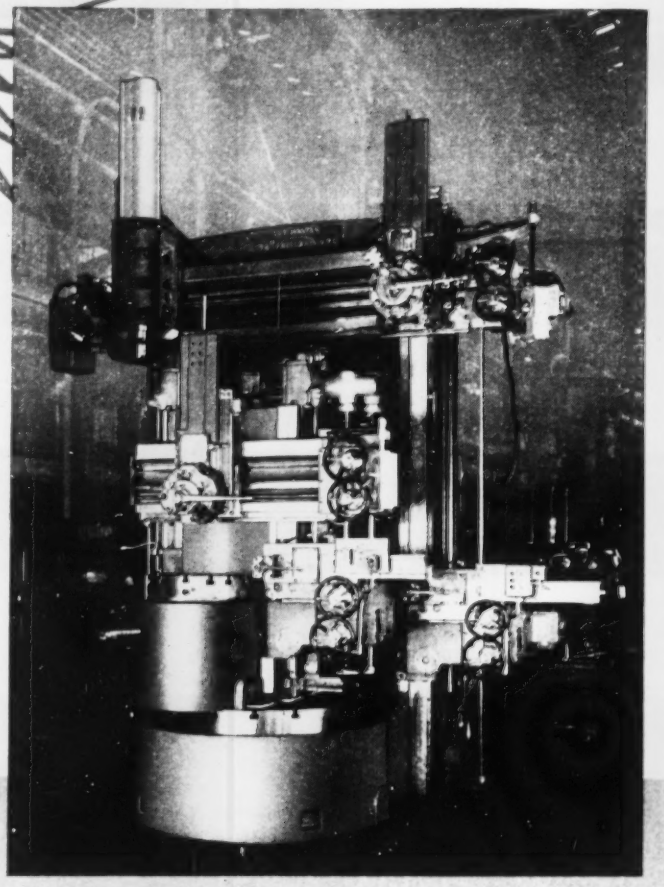
Alert companies are using many techniques to install a sense of management in foremen. Firms such as Otis Elevator Co., New York, have frequent meetings to discuss problems and policy. Several companies select younger foremen, in order to have longer to train them. Special inducements offered foremen may include distinctive offices, private parking lots or individual uniforms.

THE FOREMAN: Who he supervises; what he earns

	Workers Supervised	Average Monthly Earnings
SMALL PLANTS *(Under 100 workers)*	20	$419
MEDIUM PLANTS *(100-1000 workers)*	20-45	$440
LARGE PLANTS *(over 1000 workers)*	45-50	$482

Source: National Foremen's Institute Inc.

the Small and the LARGE...



CUT MASTER

VERTICAL TURRET LATHES

Six specific sizes 30-36-42-54-64 and 74 inch with extra high beds when required.

Shown here is the 30 inch machine comfortably nestling on the table of a 74 inch high bed machine. There was no fear of spindle bearing damage or bed deflection even with this 26,000 lb. load. Proof of confidence in the rugged construction of Bullard Cut Masters.

Heavy work on Cut Masters is no exception even on the smaller sizes. Rigid castings and heavy construction combined with rugged and accurate spindle design throughout the entire line provide for exceptional cutting loads with a high degree of repetitive accuracy.

Flexibility of tooling, assures efficient change-over from one job to another. Effective controls provide accurate duplication of limits on quantity production.

All-in-all machine tool versatility and a wide range of sizes and capacities place these machines as a factor in your manufacturing efficiency program.

...CONSIDER...
INVESTIGATE

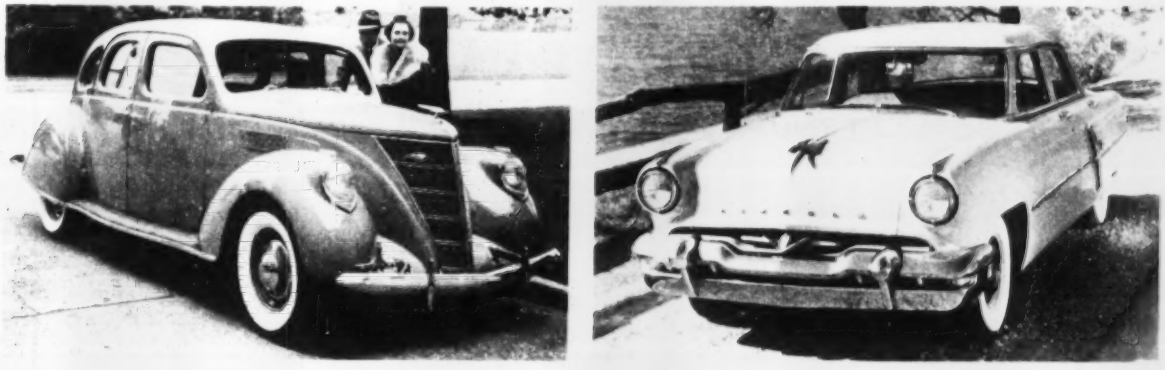
BULLARD

MACHINE TOOLS

TIME SAVED
IS MONEY EARNED

By FLOYD G. LAWRENCE *Detroit Editor*

Mirrors of Motordom



Then and now in automotive streamlining

What's happened to automotive streamlining? Americans want the living-room-on-wheels style, a fact that is behind the horsepower race and current box-like bodies

DETROIT

DO YOU remember streamlining?

Streamlining as applied to automobiles first came into vogue shortly after the turn of the century. As late as the 1930s, the designers in their quaint old way figured that since the automobile moves through a sea of air it was well to shape the body of the automobile in such a fashion that the air was moved aside as effortlessly as possible.

The Big Change—But that, of course, was long before the auto companies knew the things they know today. Modern American autos are comfortable, reliable, luxurious and easy to drive. However, most of their bodies are covered with chrome that would shame a juke box and with few exceptions are styled much on the same pattern.

The strangest thing about the whole story is that Harry Horsepower, average motorist, hasn't even noticed the death of streamlining. A juke box, to Harry, would be streamlined if it had a sufficiently pointed hood ornament and a couple of chrome arrows to indicate which way it was going.

Then and Now — The pictures above, chivalrously supplied by Lincoln, illustrate a point which could be applied to most other makes equally well. Top speed of the 1953 Lincoln is close to 110 mph and in achieving this speed the car utilizes a 205 hp engine. To achieve the same speed in the 1937 Lincoln Zephyr shown to the left, only 140 hp would be required. The one-third power saving is streamlining, and streamlining today is something reserved largely for aircraft and vacuum cleaners.

There have been a few exceptions. The 1950 Nash Airflyte had only one pound more air resistance than the 1937 Lincoln, but the new Nash probably has much more. The new Studebaker shows outstanding aerodynamic characteristics and perhaps there are a few others. But by and large cubism has taken over in auto design.

The Reason Why — How, you may well ask, did we get this way? The answer lies in a strange phenomenon, fostered by auto consumer research, best described as "the six bushels of apples" credo. That is, three bushels in the back seat and three in the trunk. For despite the fact that the average car is populated with only 1.8 persons, designers have been forced to go to more generous body dimensions in meeting the living-room-on-wheels demands.

The biggest lump on the designers' board is the mythical sixth passenger — the third person in the back seat. This sixth seat alone, in the opinion of one prominent auto stylist, has cost five miles an hour in top speed, two to three miles per gallon in fuel consumption and 15 to 20 horsepower in parasitic drag. The reason is simply that with this extra passenger room the rear end of the automobile cannot be tapered.

Sales Pressure — The stylists would quickly leave passenger number six hitchhiking, but the sales departments hasten to advise them that the average motorist wants this added room he will practically never use. To maintain visibility with this added width in the rear of the car, a second windshield utilizing notched-back body design or built-in flaps is almost mandatory.

That's one reason for the added horsepower. A motorist wants to know his car will go 100 mph even though he'll never drive it that fast. Remembering that the wind resistance increases with the square of the speed and the horsepower required increases with the cube of the speed, the box-body school of automobile design is contributing mightily to the horsepower race. A bull-dozer could probably crack 100 mph if you could hang enough power on it and the basic inefficiency of most modern auto body designs in streamlining is hidden by their truly outstanding engines.

First Reason—The primary reason for the horsepower race, of course, is the need to maintain ac-

(Material in this department is protected by copyright and its use in any form without permission is prohibited)

celeration with increased body weight. Increased top speed under the circumstances is a byproduct of this energy and perhaps it's just as well that the modern car's box-like design tends to hold top speed down.

Be that as it may, consumer taste has dictated this inefficient design and there it is. Stylists aren't sure how they can get out of it and many are secretly wishing the Studebaker success in the hope that sales departments will permit tapered rear ends to go with the tapered front ends the advent of the V-8 makes possible.

But meanwhile among the automakers "style" has replaced "streamlining" as the number one tool to separate Harry Horsepower from his shekels.

Car of the Week

Double whee and wow! If creamed competition at traffic lights is your dish, the Hudson Jet has the stuff. A week spent driving the new Super Jet with Twin-H Power left a score of startled drivers in the Detroit area trying to figure out what was the matter with the engines of their hopped-up Fords. When it was tried against all other comers in Detroit products, there simply was nothing at hand that could stay with it in a drag. With an approximate 0-60 mph acceleration figure of 11.5 seconds it's little wonder.

The Twin-H setup provides outstanding torque and the power-to-weight ratio is around 23.6 to 1, knocking on the door of the sports car class. The car rides comfortably and cornering is better than average. Visibility is excellent, road holding at speeds up to 75 mph is good with a reassuring absence of light car "float," and interiors bear the traditional Hudson touch of sparkle without garishness.

All is not peaches and horsepower with the Jet, however. The little gnomes under the floorboards that shift the Hydra-Matic transmission were particularly eager little gnomes and when they got the word they shifted with a vengeance. The result was a somewhat annoying spurt every time the gears changed. This occurred regardless of whether the accelerator was depressed or released and is perhaps to be expected in a car of this weight and power proportion.

The Jet is billed as a six-passenger automobile. That may be true for six thin people in love, but three in the front seat find themselves lighting each other's cigarettes — inadvertently. Two in the front is top baggage for any appreciable trip while the back would hold three kids in plenty of comfort.

Also on the wonderment side is the step-down design feature. Pulling alongside a Hudson Hornet at a traffic light reveals that the Jet occupant looks down several inches on his Hornet-brand brother. Step down is there, but the degree does not approach that of the other cars in the Hudson line.

But the Hudson Jet is an automobile that puts much of the fun back into driving. It gets in and out of traffic in a manner that would satisfy an expectant father, while retaining in a large degree the visibility and comfort Americans have come to demand from their cars.

Auto, Truck Output

U. S. and Canada

	1953	1952
January	612,815	424,559
February	623,793	464,557
March	746,933	525,024
April		570,464
May		542,559
June		542,478
July		226,134
August		322,755
September		595,715
October		656,767
November		548,782
December		569,715
Total		5,989,509

Week Ended	1953	1952
Mar. 14	165,762	120,392
Mar. 21	169,923	125,347
Mar. 28	181,749	132,850
Apr. 4	170,567	125,668
Apr. 11	175,522	123,180
Apr. 18	170,000*	131,657

Sources: Automotive Manufacturers Association, Ward's Automotive Reports. *Preliminary

Exhaust Notes

This week the rumor mart is working overtime on the subject of sports cars. Oldsmobile is reported to be on the verge of Fiesta sports car production. The car, as rumor has it, would sell for $5175, which may come as news to Oldsmobile. Production would be coming late in the summer with Fiberglas body and a hopped-up Rocket power plant.

Studebaker is also reported to be near the sports car plunge. Basic styling of the very adaptable current line would be employed and a double overhead camshaft kit would assist in hopping the Commander's V-8 to over 200 hp. Hop-up kits to soup the mill to about 180 hp are already available, by the way, but sans overhead camshafts.

Also rumored to be considering production of sports cars now under test are Ford, Hudson, Dodge and just about anyone else you would care to mention. Undoubtedly the automakers are testing sports cars, but the step to production is another story. Maybe it's the spring weather influence.

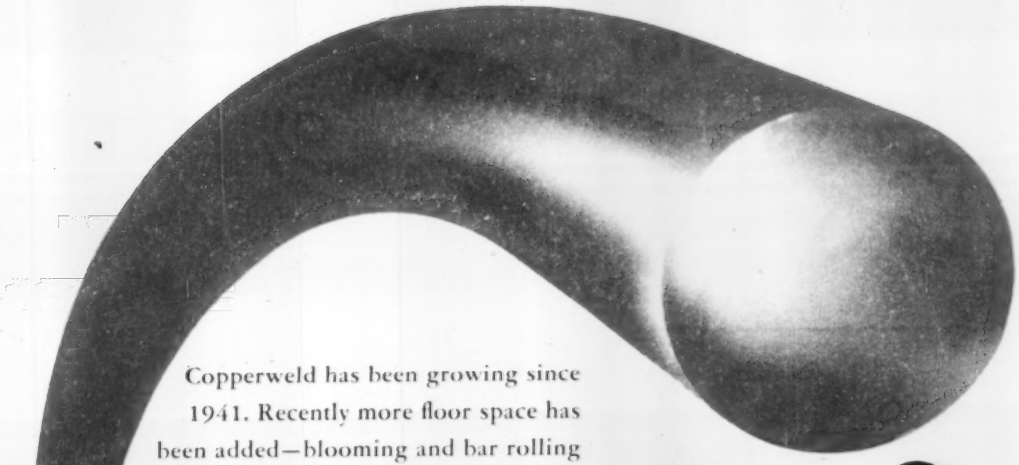
There's a rather interesting thing you may have noticed. In 1951 the Chrysler went to the V-8, in 1952 Desoto took the step and in 1953 Dodge got the power pill. Next year will be 1954 . . . Incidentally, there's a rumor going the rounds that Chrysler will have a 220 hp version of the Firepower engine coupled with one of the finest automatic transmissions in the industry under its hoods next year.

Monroe Auto Equipment Co. announces a hydraulic power steering mechanism which replaces the drag link in conventional steering systems, thus making the unit adaptable to existing cars as an accessory. Slated to sell for about $225, the unit also is undergoing tests by many of the automakers for possible installation as original equipment.

Parade of Progress

The GM "Parade of Progress" in its newest version rolled out of Detroit last week on the first leg of a nationwide tour. The last Parade of Progress was halted in 1941 by the outbreak of war.

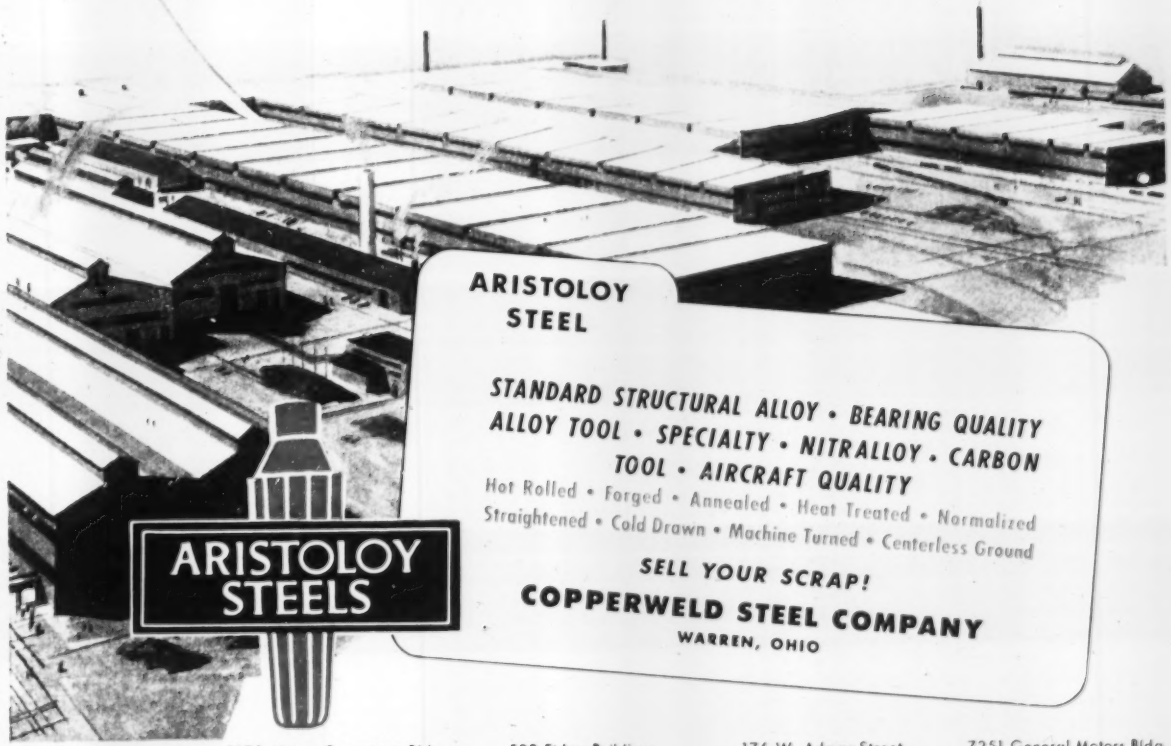
The educational show will be kept on the road indefinitely, says Harlow H. Curtice, GM president.



Copperweld has been growing since 1941. Recently more floor space has been added—blooming and bar rolling capacity increased—new furnaces added. Last year our output increased 30 per cent over what had been a good year.

Despite this however, we are still unable to serve our friends to the full extent of their requirements. Accordingly we have stepped up our expansion program. The results are not yet apparent in improved service on Aristoloy Steels—but we will soon be able to better meet your needs.

More Steel Coming Up!



ARISTOLOY STEELS

ARISTOLOY STEEL

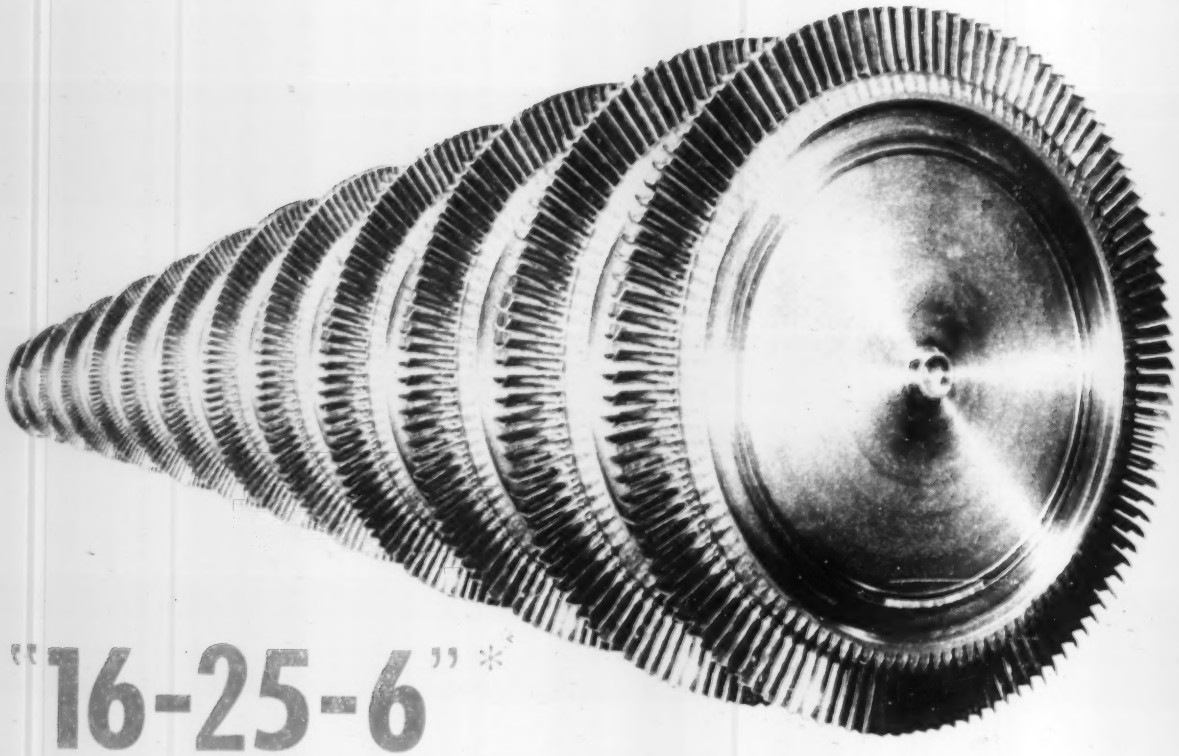
STANDARD STRUCTURAL ALLOY • BEARING QUALITY
ALLOY TOOL • SPECIALTY • NITRALLOY • CARBON TOOL • AIRCRAFT QUALITY

Hot Rolled • Forged • Annealed • Heat Treated • Normalized
Straightened • Cold Drawn • Machine Turned • Centerless Ground

SELL YOUR SCRAP!

COPPERWELD STEEL COMPANY
WARREN, OHIO

117 Liberty Street, New York, New York
1578 Union Commerce Bldg., Cleveland, Ohio
528 Fisher Building, Detroit, Michigan
176 W. Adams Street, Chicago, Illinois
7251 General Motors Bldg., Detroit, Michigan
3104 Smith Tower, Seattle, Washington
P. O. Box 1633, Tulsa, Oklahoma
325 W. 17th Street, Los Angeles 15, Calif.
Monadnock Building, San Francisco 5, Calif.
1140 Lockwood Drive, Houston 20, Texas
803 Loew Building, Syracuse, New York



"16-25-6"*

. . . the super-alloy that's used in more jet engine rotor wheels than all other alloys combined!

"16-25-6"* is the super-alloy steel that helped make jet propulsion practical in America. Developed by the Timken Company during the last war, more of it is now used in jet engine rotor wheels than all other alloys combined!

"16-25-6"* has the best combination of the three top requirements for jet engine rotors:

(1) It has good high temperature properties. Operating at extremely high temperatures, it retains high creep and stress rupture strength and has excellent resistance to scaling and corrosion.

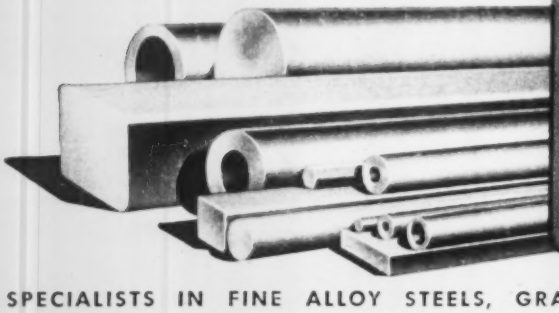
(2) "16-25-6"* is relatively low in strategic alloys, and contains no cobalt or columbium.

(3) It has good machinability.

The Timken Company has many years of experience in high temperature steels. If you need help in choosing the proper steels for your high-temperature, high-stressed applications, write The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio. Cable address: "TIMROSCO".

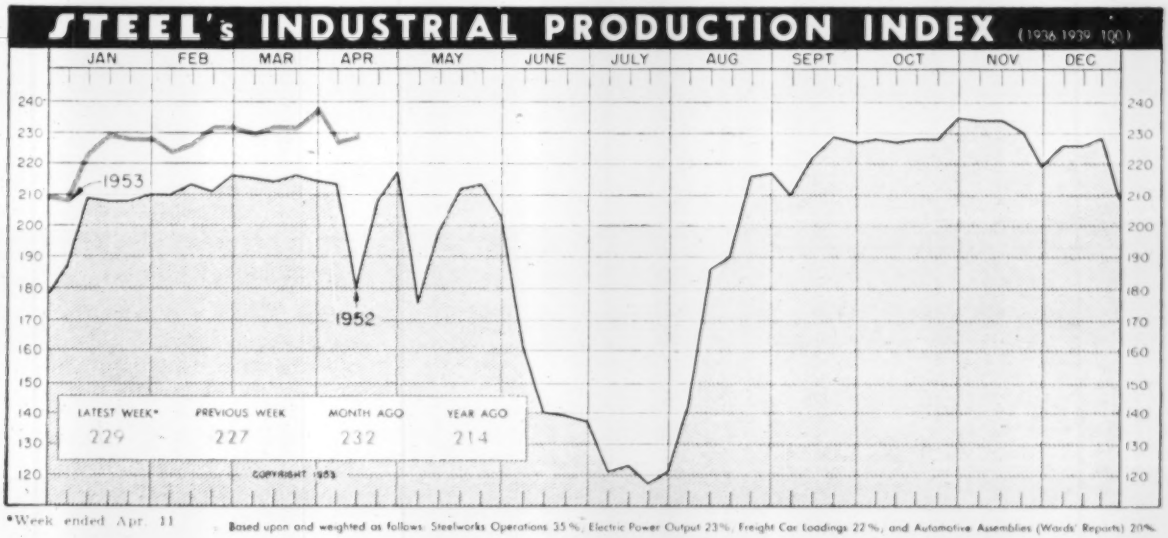
*Reg. U. S. Pat. Off.

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH



TIMKEN
Fine Alloy
STEEL

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING



*Week ended Apr. 11

Based upon and weighted as follows: Steelworks Operations 35%, Electric Power Output 23%, Freight Car Loadings 22%, and Automotive Assemblies (Wards' Reports) 20%.

Many metalworking companies are producing more civilian goods than immediate demand requires. Assembly lines may slow if consumer spending starts to level out

METAL PRODUCTS are flowing off assembly lines in such force that inventories are once again taking on added weight, despite the strongest civilian market for durables since the post-Korea buying rush.

Durables producers on Mar. 1 held inventories valued at $24.5 billion, or about 5 per cent over their inventories on Mar. 1, 1952, says the Commerce department's Office of Business Economics. Wholesale supplies of durables increased 4 per cent over the year to $5.3 billion, while retail inventories on Mar. 1 totaled $9.8 billion in durables, or 2 per cent over a year earlier.

Sales Bounce Up — These over-the-year gains in inventories attain significance in the light of today's hefty market demand. Manufacturers of durables in February chalked up a $12.2 billion sales volume, nearly 15 per cent over February, 1952. Retail sales of durables that month rose 13.8 per cent over the year to $4.4 billion, while wholesale volume edged up 4 per cent to $2.6 billion in the year ended Mar. 1.

The obvious meaning of this sales-inventory relationship is that civilian metalworking companies are now maintaining their production above consumer needs. Many producers are wondering if their finished goods inventories are too high. Present output can be maintained only if demand continues to spiral upwards; any leveling off in demand is certain to curtail many production lines.

Output Regained — Industrial production hampered by scattered strikes, is slowly gaining some of the momentum lost in recent weeks. STEEL's industrial activity index rose 2 points in the week ended Apr. 11 to 229 per cent of the 1936-1939 average. Steel production rose 3 percentage points to 98 per cent of rated capacity on Jan. 1. Automotive operations, set back the previous week, gained nearly 5000 units, while electricity production continued its seasonal downtrend.

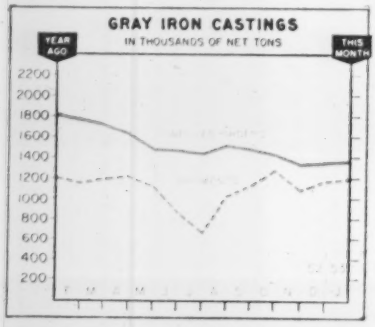
Construction Awards Soaring...

Contractors and architects will do a record business volume in 1953, if awards for new construction continue to gather more momentum. F. W. Dodge Corp. says that contract awards in the 37 states east of the Rockies totaled in the first quarter $3.4 billion, up 11 per cent from the first three months of 1952. Residential awards rose 12 per cent over the year to $1.5 billion, while nonresidential contracts rose 10 per cent to $1.2 billion. Awards placed in the first quarter for heavy engineering projects totaled $730 million, up 11 per cent from the January-March period of 1952.

Auto Target Raised...

The automotive industry, unlike some other civilian producers, says it has a long way to go before demand for new passenger cars is met. Production of passenger cars in the third quarter is now scheduled at 1.9 milion vehicles, or 100,000 units over previous expectations for the April-June period and the highest quarterly car volume in history, says *Ward's Automotive Reports*.

Behind the increased output lies the factor of surging demand. Dealers in March sold around 500,000 new passenger cars, 48 per cent more than a year earlier and the highest monthly turnover since March, 1951, when 542,100 cars were retailed. New car stocks rose to a 20-month high on Mar. 20, but aren't causing anxiety throughout the industry, says *Ward's*. Current production is running about 25 per cent over the top points of last year, while stocks average only

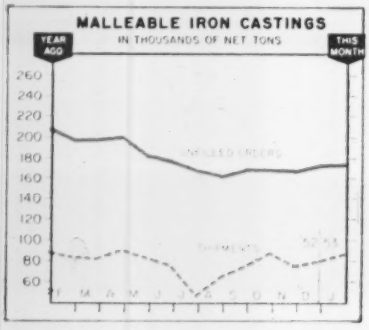


Gray Iron Castings

Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1953	1952	1953	1952
Jan.	1,162	1,199	1,333	1,801
Feb.		1,155	....	1,766
Mar.		1,172	....	1,711
Apr.		1,205	....	1,614
May		1,101	....	1,459
June		825	....	1,445
July		636	....	1,410
Aug.		1,002	....	1,513
Sept.		1,119	....	1,451
Oct.		1,233	....	1,392
Nov.		1,061	....	1,309
Dec.		1,142	....	1,316
Total		13,660		

* For sale. U. S. Bureau of the Census.

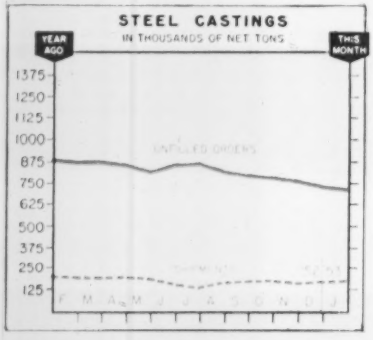


Malleable Iron Castings

Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1953	1952	1953	1952
Jan.	87.2	87.0	174.8	262.0
Feb.		82.9	....	193.1
Mar.		81.0	....	196.9
Apr.		86.3	....	198.2
May		81.8	....	180.4
June		74.4	....	173.1
July		45.3	....	166.6
Aug.		62.7	....	162.8
Sept.		75.9	....	168.1
Oct.		88.1	....	168.6
Nov.		76.1	....	167.8
Dec.		80.6	....	173.5
Total		926.1		

* For sale. U. S. Bureau of the Census.

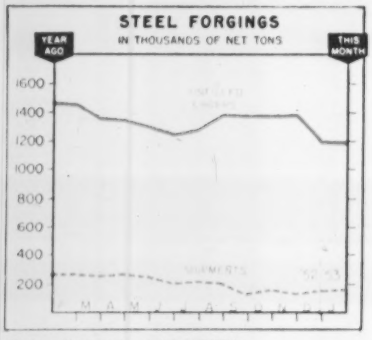


Steel Castings

Thousands of Net Tons

	Shipments		Unfilled Orders*	
	1953	1952	1953	1952
Jan.	167.2	183.7	706.5	869.3
Feb.		174.6		856.9
Mar.		173.7		827.1
Apr.		175.1		813.0
May		173.6		804.7
June		141.6		846.5
July		119.0		855.0
Aug.		150.2		809.4
Sept.		158.4		781.9
Oct.		165.2		772.9
Nov.		148.3		754.7
Dec.		161.7		719.2
Total		1,925.1		

* For sale. U. S. Bureau of the Census.



Steel Forgings*

Thousands of Net Tons

	Shipments		Unfilled Orders	
	1953	1952	1953	1952
Jan.	184	271	1,267	1,472
Feb.		277	....	1,464
Mar.		266	....	1,360
Apr.		277	....	1,349
May		263	....	1,319
June		224	....	1,248
July		132	....	1,200
Aug.		121	....	1,366
Sept.		150	....	1,392
Oct.		178	....	1,393
Nov.		156	....	1,366
Dec.		181	....	1,377

U. S. Bureau of the Census. *Data based on reports from commercial and captive forge plants with monthly shipments of 50 tons or more.

Charts Copyright 1953 STEEL

Issue Dates on other FACTS and FIGURES Published by STEEL

Construction	Apr. 6	Gear Sales	Mar. 9	Ranges, Elec.	Apr. 13
Durable Goods	Mar. 30	Indus. Production	Feb. 16	Ranges, Gas	Mar. 30
Employ., Metalwk.	Mar. 30	Ironers	Apr. 13	Refrigerators	Feb. 2
Employ., Steel	Apr. 6	Machine Tools	Mar. 23	Steel Shipments	Nov. 3
Fab. Struc. Steel	Mar. 30	Pumps	Apr. 6	Vacuum Cleaners	Mar. 23
Foundry Equip.	Mar. 23	Prices, Consumer	Jan. 26	Wages, Metalwk.	Mar. 9
Freight Cars	Mar. 23	Prices, Wholesale	Apr. 13	Washers	Mar. 30
Furnaces, Indus.	Apr. 6	Radio, TV	Apr. 13	Water Heaters	Mar. 30

8.82 new cars (45,191 total) per dealer, compared with 12 passenger cars per dealer earlier in the post-war period.

With market forecasts favorable, U. S. and Canadian plants produced in the week ended Apr. 11 some 175,552 passenger cars and trucks. This weekly total is 4955 units above production a week earlier but a little more than 6000 units under the two-year record set the week of Mar. 28.

Personal Income Up . . .

One reason why manufacturers of passenger cars, TV sets and other civilian goods tend toward optimism is the growth in personal income. The Commerce department says that personal income in January and February reached an annual rate of $280.5 billion. This marks a 6 per cent increase over the like 1952 months. Individual income in February flowed at an annual rate of $280.4 billion, about $17 billion above the annual rate of February, 1952, but $200 million lower than the seasonally adjusted annual rate attained in January.

Freight Car Orders Lag . . .

Unfilled orders for freight cars continue to rumble downhill as production outdistances incoming orders, nearly two to one. The American Railway Car Institute says that deliveries of new domestic freight cars in March totaled 6679 units, compared with 7780 in February and 8159 units in March, 1952. New orders for 3379 freight cars were placed in March, compared with 2284 units in February and 5619 cars ordered during March, 1952. The industry on Apr. 1 had unfilled orders for 68,553 cars compared with a backlog of 71,883 cars on Mar. 1 and 115,854 cars on order on Apr. 1, 1952.

Tight Money Ahead . . .

Indicative of a tight money market ahead is the only slight increase in dollars available for stepped-up business transactions. Bank clearings in the 25 leading U. S. cities totaled $3.1 billion in March, an increase of 9.2 per cent over March, 1952, says Dun & Bradstreet Inc. Total value of

BAROMETERS OF BUSINESS

	PERIOD* LATEST	WEEK PRIOR	AGO YEAR
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	98.0	95.0	62.0
Electric Power Distributed (million kwhr)	8,000[1]	8,018	7,154
Bituminous Coal Output (daily av.—1000 tons)	1,149	1,155	1,366
Petroleum Production (daily av.—1000 bbl)	6,325[1]	6,341	6,366
Construction Volume (ENR—millions)	$195.1	$342.0	$228.5
Automobile, Truck Output (Ward's—units)	175,522	170,567	123,180
TRADE			
Freight Car Loadings (unit—1000 cars)	715[1]	705	691
Business Failures (Dun & Bradstreet, number)	140	171	184
Currency in Circulation (millions)[3]	$29,780	$29,754	$28,526
Dept. Store Sales (changes from year ago)[3]	+8%	+11%	+11%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$15,705	$18,128	$16,477
Federal Gross Debt (billions)	$264.4	$264.5	$257.3
Bond Volume, NYSE (millions)	$20.9	$14.3	$11.0
Stocks Sales, NYSE (thousands of shares)	10,278	9,826	4,939
Loans and Investments (billions)[4]	$76.8	$77.8	$73.1
United States Gov't. Obligations Held (billions)[4]	$29.5	$30.6	$31.2
PRICES			
STEEL's Weighted Finished Steel Price Index[5]	181.31	181.31	171.92
STEEL's Nonferrous Metal Price Index[6]	229.3	230.5	243.6
All Commodities[7]	109.8	109.8	112.5
All Commodities Other Than Farm and Foods[7]	113.3	113.3	114.2

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1951, 1,999,035; 1952, 2,077,040. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

U. S. currency in circulation, however, now stands at around $29.8 billion, up only 4 per cent from a year ago.

Stoker Sales Drop . . .

Despite the present construction boom, sales of mechanical stokers are continuing to drop off. The U. S. Bureau of the Census says that factory sales of mechanical stokers in February fell 31 per cent under February, 1952, to 870 units. Residential stoker sales totaled 603 units, compared with 903 units in February, 1952. Apartment house and commercial units dropped to 241 units from 315 units of a year earlier. Large industrial stoker sales declined to 26 units from 57 stokers sold in February, 1952.

Ranges Selling Faster . . .

Manufacturers of electric ranges and refrigerators are boosting production over their volume of a year ago, but industry output is still lagging under that of early 1951. The National Electrical Manufacturers Association says that factory sales of household electric ranges in February totaled 114,465 units, compared with 63,063 units sold a year earlier and 121,585 units sold in February, 1951.

Refrigerator makers in February sold 377,605 units, compared with 259,838 in February, 1952. Two years earlier, in February, 1951, manufacturers' sales rose to the hefty total of 403,035 houshold electric refrigerators.

Aluminum Output Increases . . .

As demand soars for military aircraft, output of aluminum products is rising far above that of a year ago. The U. S. Bureau of the Census says that shipments of aluminum wrought products in February amounted to 186 million pounds, or 27 per cent over shipments in February, 1952.

Poundage of magnesium wrought products barely climbed over the year-ago figure. Shipments of this light metal totaled 1,768,000 pounds in February, compared with 1,759,000 pounds shipped in the corresponding month of 1952.

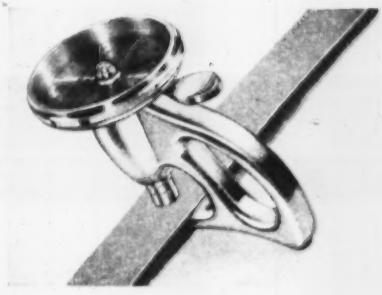
Trends Fore and Aft . . .

Combined radio-TV production in 1952 is valued at nearly $1.3 billion . . . Minneapolis-Moline Co. says that its dollar sales of farm machinery in March rose 45 per cent over March, 1952 . . . Class One railroads spent less on fuel and supplies in 1952 than a year earlier, but more than in 1950 and 1949.

Portable

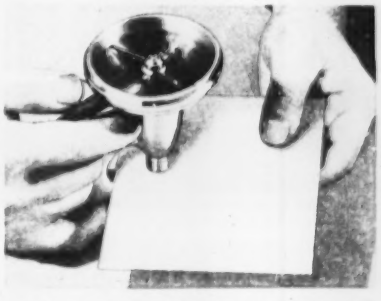
Cady Exact

MICROMETERS



for Calipering thicknesses to ½"

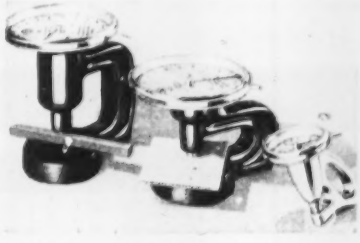
for on-the-spot calipering of sheet or bar stock. Designed to fit the hand; light weight, moderately priced. Horizontal glass covered dial gives direct reading without computation. Meets ASTM requirements. Special graduations can be made to order.



Graduated in 1/1000ths of an inch

for inspecting, comparing or checking thicknesses. Extremely accurate calibrations permit uniform method of measurement by personnel on the production line or on the road.

Also available in desk or laboratory sizes



Write for complete information and prices

E. J. Cady & Company

Manufacturers

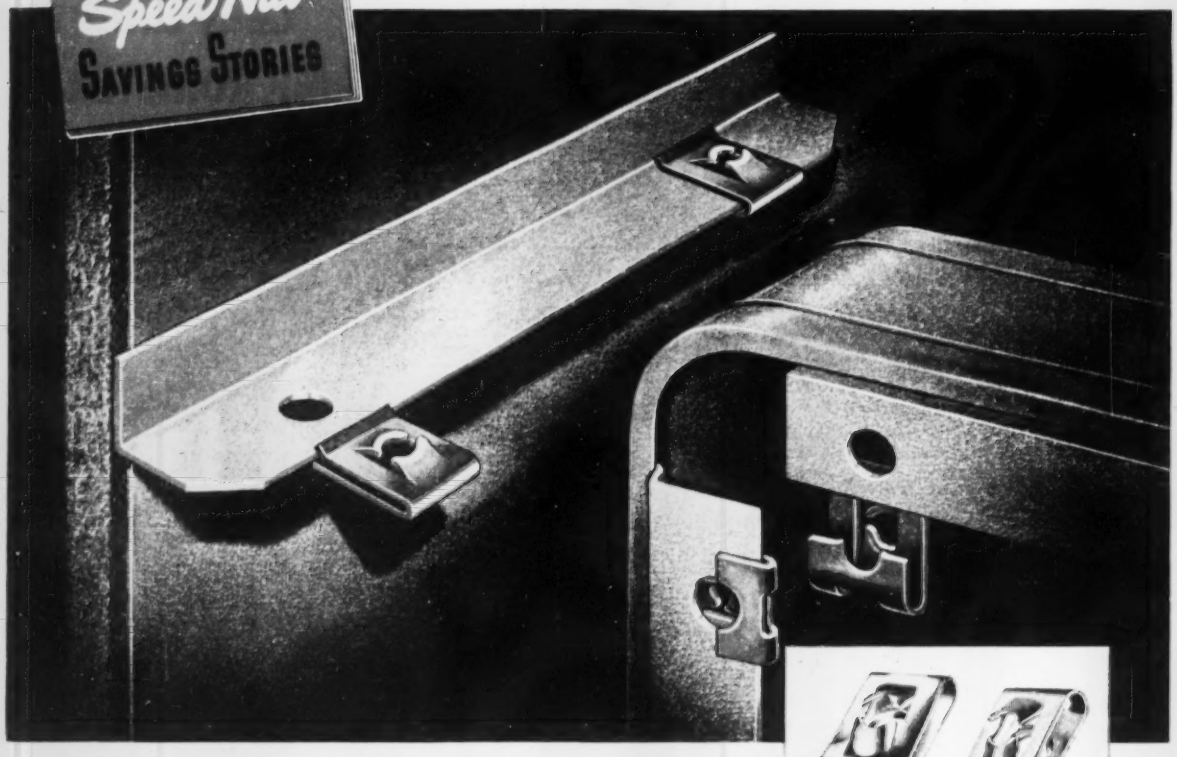
630 North Harlem Avenue

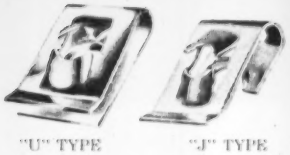
River Forest, Illinois

FASTEST THING IN FASTENINGS®

TINNERMAN

Speed Nut® Savings Stories



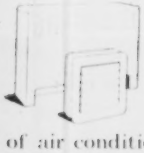


"U" TYPE "J" TYPE

SPEED NUTS® are one-piece, self-locking, spring steel fasteners. Snap over panel edges or center hole locations . . . self retained in screw-receiving position for easier, faster assembly in "blind" locations. Available for a full range of screw sizes and panel thicknesses.

SPEED NUTS Saved 6,144 Assembly Hours, Thousands of Production Dollars

Reports the Trane Co., La Crosse, Wisconsin



"Every time we use a SPEED NUT, we save 14 seconds in production time", say Trane engineers. In one year, this leading manufacturer of air conditioning, heating and ventilating equipment netted 6,144 extra assembly hours, plus amazing savings in materials and materials handling. Misalignment of ventilator weld nuts and mounting holes slowed production continuously. Replacing them with "U" type SPEED NUTS, which snap in place by hand and provide floating alignment, ended this bottleneck. Costly installation of convector heater coil headers was overcome with "J" type SPEED NUTS. Snapped directly on frame members, they eliminated eight cast iron drilled and tapped ears and two welded support brackets. SPEED NUTS, applied after painting, eliminated masking or retapping of threads—licked rust problems.

Call in your Tinnerman representative for a FREE fastening analysis of your product . . . he may find comparable savings for you through greater fastening efficiency.

Send today for your copy of "SPEED NUT Savings Stories", a booklet of savings for industry. Write: TINNERMAN PRODUCTS, INC., Box 6688, Dept. 12, Cleveland 1, Ohio. *In Canada:* Dominion Fasteners, Ltd., Hamilton, Ontario. *In Great Britain:* Simmonds Aerocessories, Ltd., Treforest, Wales. *In France:* Aerocessoires Simmonds, S. A.—7 rue Henri Barbusse, Levallois (Seine).

TINNERMAN Speed Nuts®

MORE THAN 8000 SHAPES AND SIZES

Men of Industry

ALBERT J. McLAREN
. . . Cross Co. sales mgr.

NORMAN L. KREY
. . . Northwest mgr., Kaiser Aluminum

Albert J. McLaren was appointed sales manager, **Cross Co.**, Detroit. He was sales engineer. Mr. McLaren joined Cross in 1947. He previously operated Mechanical Tool & Engineering Co.

Rolled Alloys Inc., Detroit, appointed **Rollo W. Boring** sales manager.

Bliss & Laughlin Inc., Harvey, Ill., promoted **Carl A. Peterman** to director of purchases and **John Bossert** to purchasing agent.

William B. Todd retired as executive vice president, **Continental Foundry & Machine Co.**, Pittsburgh. He continues as a director and in an advisory capacity. **Arthur E. Murton**, vice president, was made manager of the Pittsburgh office to succeed Mr. Todd.

S. L. Crenshaw is the new president of **Amgears Inc.**, Chicago, Hupp Corp. subsidiary, and executive head of its Chicago operations.

Brown-McLaren Mfg. Co., Hamburg, Mich., elected **William M. Warner** vice president.

Newman-Crosby Steel Co., Pawtucket, R. I., elected **Paul L. Wing** vice president-sales and **Stuart A. Woodruff** vice president-production.

Kaiser Aluminum & Chemical Corp., Oakland, Calif., appointed **Norman L. Krey** manager, northwest operations. Formerly manager of reduction operations, Mr. Krey will supervise development plans and industry relations for both the reduction and fabrication operations in the Northwest.

Walter F. Greenwood, formerly with the Air Material Command, U. S. Air Force, joined **Cleveland Welding Co.**, Cleveland, subsidiary of **American Machine & Foundry Co.**, as assistant to the president.

From May, 1946, to May, 1947, he was sales manager, Dynamometer Division, Clayton Mfg. Co.

Chicago Faucet Co., Chicago, elected **Earl E. Brown** president to succeed **Albert C. Brown**, retired; **Denis P. Ganey** vice president and **Harry E. Teichen** secretary-treasurer. **Howard W. Thomas** was appointed sales manager and **Edwin G. Ettswold** director of product engineering.

W. S. Simpson was elected vice president in charge of the Raybestos Division, **Raybestos-Manhattan Inc.**, Passaic, N. J. **M. A. Thompson** was made assistant comptroller.

Joseph L. Geenens, formerly superintendent of the Alnico permanent magnet section of Carboloy operations in Schenectady, N. Y., was made manufacturing superintendent of the Edmore, Mich., plant of **Carboloy Department**, General Electric Co.

C. B. Budinger is general manager, **United Stove Co.**, Ypsilanti, Mich., subsidiary of Gar Wood Industries Inc. He was sales manager, stove and heater division, Nesco Inc.

Ralph F. Merriam was named director of purchases and **Edward W. Wehrle** purchasing agent at **Tinnerman Products Inc.**, Cleveland. Prior to joining Tinnerman

WALTER F. GREENWOOD
. . . joins Cleveland Welding

RALPH F. MERRIAM
Tinnerman purchasing director

ALBERT G. LINDSAY
. . . Rockwell export manager

JOHN M. STEVENSON
. . . div. chief engineer at United Machine

ROBERT N. GRIFFITH
. . . Berger Mfg. dept. mgr.

Apr. 1, Mr. Merriam was for ten years purchasing agent for Grand Industries Inc.

Albert G. Lindsay was named manager of the export and international divisions of **Rockwell Mfg. Co.**, Pittsburgh. For the last six years he has been in business for himself as an American manufacturers' representative and exporter-importer with offices in Argentina, Uraguay and Brazil.

At **Continental Steel Corp.**, Kokomo, Ind., **L. B. Alley** succeeds **F. A. Lewis** as sales manager, chain link and ornamental fence division. Mr. Lewis recently became sales manager, merchant trade division. **Jack E. Elliott** succeeds Mr. Alley as assistant sales manager, chain link and ornamental fence division.

L. C. Pejeau was appointed general sales manager, **Matthiessen & Hegeler Zinc Co.**, LaSalle, Ill.

Automatic Spring Coiling Co., Chicago, appointed **Robert G. Lambrecht** assistant general manager, **Ruth M. Slafter** as buyer and **John E. Connell** as office manager.

Elmer J. Keller, assistant chief inspector at the Indiana Harbor, Ind., plant of **Youngstown Sheet & Tube Co.**, was appointed superintendent of the pipe mills there to succeed **Eric Jansson. E. E. Holmgren** is assistant chief inspector.

Pheoll Mfg. Co., Chicago, named **Fred W. Kuehn** purchasing agent to succeed **A. A. Schmid**, retired.

John M. Stevenson assumes duties of chief engineer, oil field equipment division, **United Machine Co.**, Ft. Worth, Tex., responsible for design, development and engineering of specialized equipment for the oil industry.

John W. Averill was appointed purchasing agent for **Stromberg-Carlson Co.**, Rochester, N. Y. He succeeds **David Rogers**, resigned to be a manufacturer's representative.

Fabrication Division, **Builders Structural Steel Corp.**, Cleveland, appointed **Walter Schneider** to the new post of contract manager. He will expedite contracts as well as supervise methods and plant expansion.

WALTER SCHNEIDER
. . . div. contract mgr., Builders Structural

Robert N. Griffith was appointed manager, shelving sales department, **Berger Mfg. Division**, Republic Steel Corp., Canton, O. He succeeds the late **Clyde S. Bergert.** Mr. Griffith formerly was Indianapolis district sales manager.

Clearing Machine Corp., Chicago, appointed **Charles J. Linduska** and **Howard W. Carlisle** as assistants to the sales manager. Mr. Linduska will be responsible for pricing policies. Mr. Carlisle will work with the field sales organization.

William E. Ackerman, assistant vice president, **Wheeling Steel Corp.**, vice president of Wheeling Corrugated Co. and president of Ackerman Mfg. Co., Wheeling, W. Va., has announced his retirement.

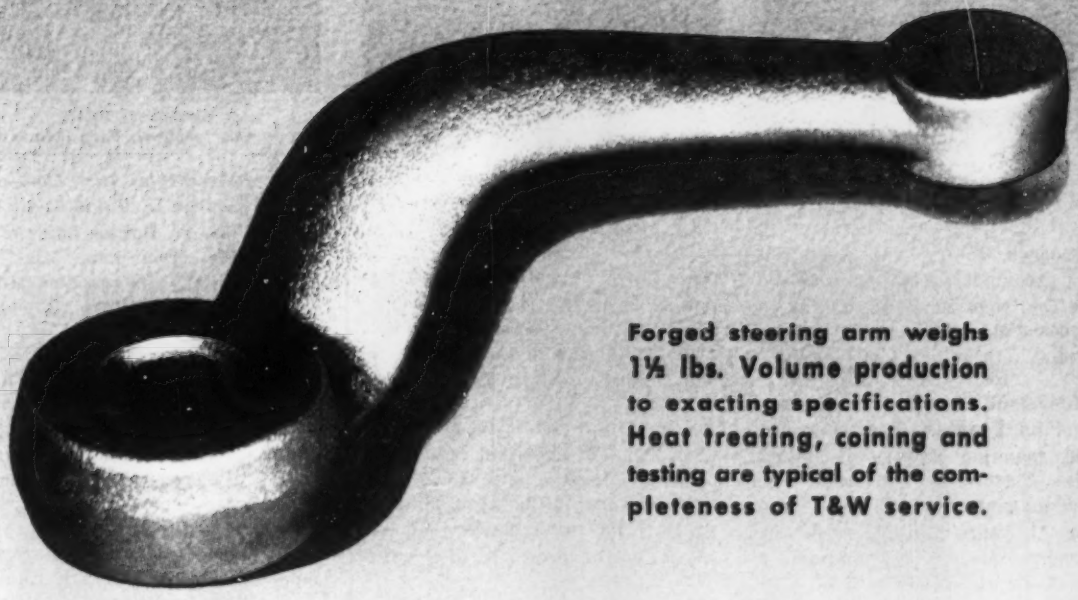
Edward J. Horkey, formerly chief engineer at North American Aviation Inc., has joined **Pastushin Aviation Co.**, Los Angeles, as vice president in charge of engineering.

Union Tool Corp., Warsaw, Ind., appointed **Lewis F. Luckenbill** special sales representative for Michigan, Wisconsin, Illinois, Minnesota, Missouri and western Indiana.

Elmer Smith was appointed director of purchases at the Grayslake, Ill., plant of **Fresh'nd-Aire Co.**, a Cory Corp. division. He was previously with American Brass Division, Anaconda Wire & Cable Co. and Massey-Harris Co. **John E. Finney** was made sales promotion

TRANSUE FORGINGS

USUALLY COST LESS AT THE POINT OF ASSEMBLY



Forged steering arm weighs 1½ lbs. Volume production to exacting specifications. Heat treating, coining and testing are typical of the completeness of T&W service.

Consult our engineers when you are contemplating conversion to forgings or when you are in need of reliable forging service.

TRANSUE & WILLIAMS

STEEL FORGING CORPORATION • ALLIANCE, OHIO

SALES OFFICES: NEW YORK • PHILADELPHIA • CHICAGO • INDIANAPOLIS • DETROIT • CLEVELAND

OVER 50 YEARS OF FORGING PRODUCTION EXPERIENCE

N. GEORGE BELURY
. . . a v. p. of American Brake Shoe

JAMES W. RIMMER
. . . a sales mgr. at Columbia-Geneva

GEORGE E. STONE
. . . chief engineer, Basic Refractories

manager of **Autopoint Co.**, another Cory division.

N. George Belury was elected a vice president, **American Brake Shoe Co.**, New York. He continues as president, Engineered Castings Division.

At **Cleveland Frog & Crossing Co.**, Cleveland, **Franklin P. Norman** becomes manager of sales, assuming duties of **Howard I. Prentice**, vice president-manager of sales, who after 41 years' service with the company, wishes to relinquish a part of his duties. **Richard W. Purdy** was made sales engineer and **Louis T. Norman** treasurer.

Allen Parkington was made chief draftsman, **Electric Regulator Corp.**, Norwalk, Conn.

James W. Rimmer becomes manager of sales for the Salt Lake City, Utah, sales office of **Columbia-Geneva Steel Division**, U. S. Steel Corp. **James B. Black Jr.** was named assistant manager of sales for the Denver office. They have been with the division's general sales offices in San Francisco.

L. B. McKnight, executive vice president, Chain Belt Co., was elected a director of **Safway Steel Products Inc.**, Milwaukee, filling a vacancy left by the death of **Irving R. Smith**, president of Sterling Wheelbarrow Co.

Henry M. Schmidt was made purchasing agent, **Johnson Service Co.**, Milwaukee. He succeeds **Carl F. Rohrbeck** who continues in a consulting and advisory capacity.

Basic Refractories Inc., Cleveland, named **George E. Stone** to succeed the late **W. W. Patnoe** as chief engineer. Mr. Stone joined the company in 1921. He became acting manager of the Ohio Works in 1952.

Pacific Airmotive Corp., Burbank, Calif., elected **Edward H. Farmer** vice president in charge of manufacturing. He formerly was works manager at Lockheed Aircraft Corp.

F. C. Stouffer was made general superintendent, aircraft fabrication department, **Kaiser-Frazer Corp.**, Willow Run, Mich.

Raymond Concrete Pile Co., New York, elected **George F. Ferris**

(*Please turn to Page* 169)

OBITUARIES...

Walter A. Newman, 63, vice president, **Hyman-Michaels Co.**, Chicago, died in Los Angeles Apr. 6. Mr. Newman was transferred to the West Coast several years ago.

Raymond L. O'Brien, president and general manager, **Detroit Brass & Malleable Co.**, Detroit, died Mar. 24.

George J. Armstrong, 84, formerly a vice president, **Columbus McKinnon Chain Corp.**, Tonawanda, N. Y., died Apr. 2.

Robert A. Sovik, district manager of **Copperweld Steel Co.** in Syracuse, N. Y., and president of Central New York Wire Corp. of Syracuse, died Apr. 1 while vacationing in Bermuda.

George A. Castle, 59, senior partner in **Speed Plating Works**, Buffalo, died Apr. 6.

Frederick Moesser, retired general purchasing agent for **Doehler Die Casting Co.**, died Apr. 8 in Florida.

Bernard Stevens, 41, a founder and vice president, **Federal Bronze Products Co.**, Newark, N. J., died Apr. 11.

Gustave H. Kann, president, **Pittsburgh Crushed Steel Co.**, Pittsburgh, and its subsidiaries, died Apr. 9.

Charles E. Simmons, 49, New York district contracting manager in charge of fabricated steel construction, **Bethlehem Steel Co.**, Bethlehem, Pa., died recently.

Ralph L. Clark, 55, owner of **Peerless Engineering Co. Inc.**, Los Angeles, died Mar. 24.

Thomas J. McIntyre, 64, for many years president and general manager, **Macklin Co.**, Jackson, Mich., died recently.

TO MAKE MORE STEEL FASTER ...WITH LESS FUEL

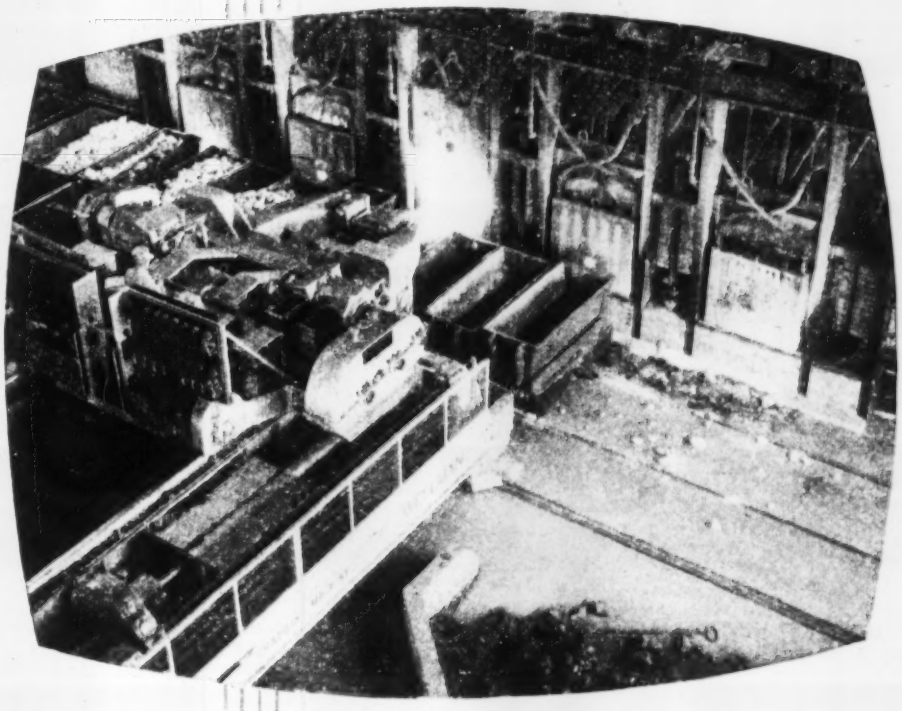
Most open hearth operators seal out excess cold air infiltration and reduce radiation losses by using *Therm-O-Flake* Insulation products. The result is higher preheat temperatures, sharper operating furnaces, with more tons of steel per hour and lower fuel cost per ton of steel produced.

THERM-O-FLAKE insulation products, including block, brick, coating, concrete and concrete aggregate, are designed especially to provide safe, complete insulation for steel plant service.

Write for new bulletin giving detailed recommendations for complete insulation of a typical open hearth furnace using *THERM-O-FLAKE* insulation products.

ILLINOIS CLAY PRODUCTS COMPANY

Chicago, Illinois • 208 South LaSalle Street
Joliet, Illinois • Barber Building



THERM-O-FLAKE INSULATION has been used in most of the new open hearth furnaces built in the United States in the past five years!

USE.. ....THERM-O-FLAKE INSULATION

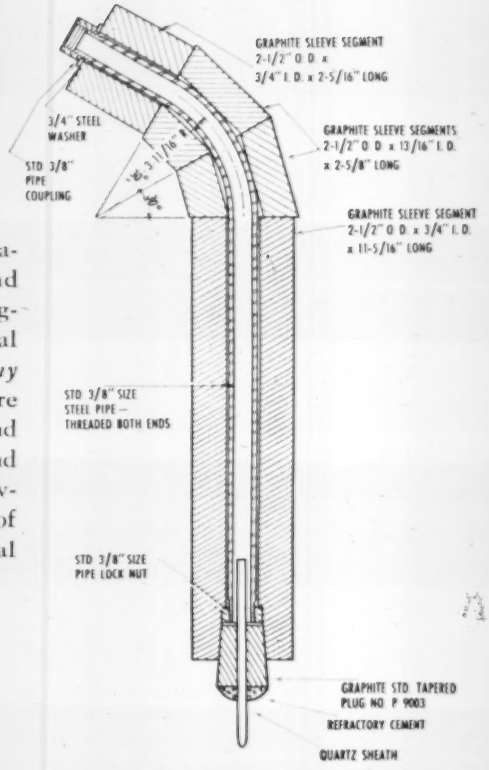
In Furnace and Foundry...

These SMALL PARTS do a BIG JOB

High temperature applications of "National" Carbon and Graphite are not limited to big-tonnage items. A part of National Carbon's service is to develop *any* application, however small, where the unique properties of carbon and graphite assure a convenience and economy to the user. In the following two instances, a few *pounds* of graphite serve literally *tons* of metal . . . efficiently and at a saving.

"NATIONAL" GRAPHITE FLUXING TUBES

Can't be equalled by any other material for the introduction of purifying gases into molten metal. Graphite can't melt in the bath, can't contaminate the metal. Its low coefficient of expansion prevents cracking and spalling. Metal and dross do not adhere tightly to it. And whatever gases are used, graphite will not corrode.



"NATIONAL" GRAPHITE-SHEATHED THERMOCOUPLE ASSEMBLY (Typical)

Only graphite could provide the degree of low-cost, trouble-free protection required by thermocouple assemblies of this type for the immersion method of measuring open hearth and electric furnace bath temperatures. Reclamation and maintenance for re-use are simple, quick, and economical. Molten metal won't stick to the graphite parts and they're immune to thermal shock.

HERE'S HOW TO LICK HY HEET

National Carbon Company
30 E. 42nd Street
New York, N. Y.

PLEASE SEND INFORMATION ON:

☐ Thermocouple Sheath Parts ☐ Fluxing Tubes

NAME_____

COMPANY_____

ADDRESS_____

The terms "National" and "Eveready" are registered trade-marks of Union Carbide and Carbon Corporation

NATIONAL CARBON COMPANY
A Division of Union Carbide and Carbon Corporation
30 East 42nd Street, New York 17, New York
District Sales Offices: Atlanta, Chicago, Dallas, Kansas City, New York, Pittsburgh, San Francisco
IN CANADA: National Carbon Limited
Montreal, Toronto, Winnipeg

LOW LIGHT BILLS . . .

. . . mark phenomenal acceptance of "EVEREADY" No. 1050 Industrial Flashlight Batteries by a broad cross-section of industry. Delivering twice the usable light of any battery we've ever made before, it will not swell, stick or jam in the flashlight . . . has no metal can to leak or corrode.

BLAST FURNACE LININGS • BRICK • CINDER NOTCH LINERS • CINDER NOTCH PLUGS • SKIMMER BLOCKS • SPLASH PLATES • RUNOUT TROUGH LINERS • MOLD PLUGS • TANK HEATERS

Opens Metal Parts Source

Precision Castparts Corp. is organized in Northwest as investment casting firm

COMPLETE precision investment casting facilities for producing intricate small parts from both ferrous and nonferrous metals are available for the first time in the Pacific Northwest. Precision Castparts Corp. has placed its plant at 8705 S. E. Thirteenth Ave., Portland, Oreg., in full commerical operation.

"Increasing need in the Pacific Northwest for an industrial source of precision small metal parts became apparent to us several years ago," says Joseph B. Cox, president of the new firm. "A pilot plant was set up in Portland as a subsidiary of Oregon Saw Chain Corp., manufacturer of Oregon chipper chain for power saws and various power saw accessories. Oregon Saw Chain requires small steel and alloy parts manufactured to close tolerances. . . and we determined that we could produce these parts in Portland more economically than we could procure them elsewhere. . . As our own need increased, and as other users of precision investment casting became interested in us as a source of supply in this area, we have increased our facilities and perfected our technics, and have formed Precision Castparts Corp. to carry on our expanding activity as a general industrial investment casting firm."

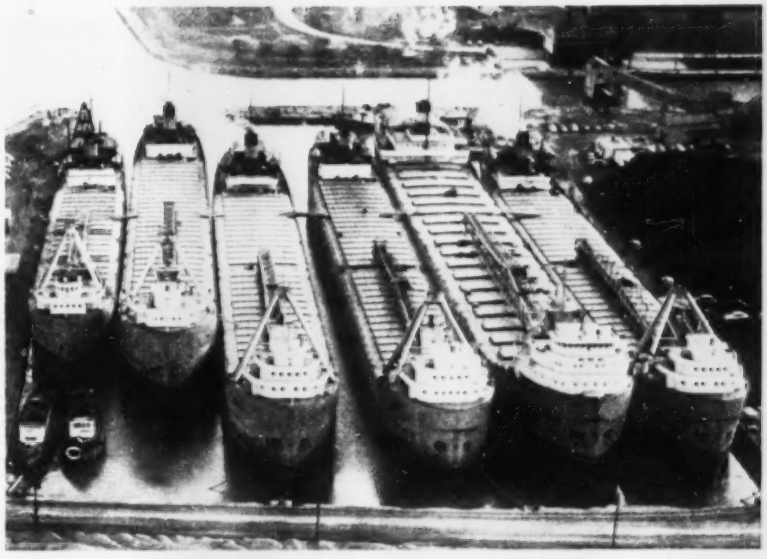
The company's equipment includes wax injection machines, burn out furnaces, steel melting furnaces, tool and die equipment, grinding and finishing equipment. The plant operates its own metallurgical laboratory.

Foundrymen's Dinner Postponed

Management dinner of the Philadelphia chapter of American Foundrymen's Society, previously scheduled for Apr. 21 at the Barclay Hotel, that city, has been postponed indefinitely.

Rockford in Full Production

Rockford Spring Co., Rockford, Ill., organized in October, 1952, is now in full production. The new firm produces mechanical springs for industrial uses. Efforts are concentrated in the precision spring field.



Prepare for Shipping Season

All winter, 200 men worked to prepare six self-unloaders of U. S. Steel's Michigan Limestone Division's fleet for the 1953 season. Among these ships at Rogers City, Mich., the newest and largest is the *John G. Munson*, second from right. The *Munson*, 666 feet long, has cargo capacity of 21,000 tons. Ship movement of limestone to steel plants and other users is now beginning

Forms Atomic Power Division

Babcock & Wilcox Co., New York, actively engaged in nuclear work since 1943, established an Atomic Power Division. The division will be headed by C. H. Gay, vice president of the company, who formerly was in charge of the manufacturing department, Boiler Division.

Alvin Roberts Honored

Alvin S. Roberts of the Insurance Co. of North America, Philadelphia, was appointed national vice president of the Society of Industrial Packaging & Materials Handling Engineers.

John W. McReynolds, Kraft Foods Co., Chicago, is national secretary, succeeding Mr. Roberts.

Novel Inventory Machine

W. S. MacDonald Co., Cambridge, Mass., produces a machine for stores in which keeping inventory is a difficult problem. Using no cards or tape, the "Magnefile" stores up information about as many as 8000 items on a "memory drum." Costing $20,000 to $30,000 each, the machines are a maze of vacuum tubes, relays, resistors, magnetic drums and miles of wiring, operated from a keyboard.

Sandvik Opens Detroit Office

Sandvik Steel Inc., New York, opened an office at 20005 James Couzens Highway, Detroit, for the distribution of Sandvik and Coromant tools. Butler C. Brewen, formerly with Vascoloy Ramet Corp., is manager of the Coromant Division and is located at the Detroit address.

Alectra Completes Plant

Alectra Metals Inc., Ann Arbor, Mich., completed an electric furnace plant for production of steel abrasives.

Acme To Build in California

Acme Electronics Inc., a subsidiary of Aerovox Corp., New Bedford, Mass., will construct a plant at 2424 Peck Rd., Monrovia, Calif., for manufacture of electronic components including filters, magnetic amplifiers and power supplies. The firm is presently located at 300 N. Lake Ave., Pasadena, Calif. Com-

pletion is scheduled by August, 1953.

Engine Institute Names Officers

R. C. Wietersen, director of purchases, Buda Co., Harvey, Ill., was elected president of Internal Combustion Engine Institute, Chicago. Other officers are: J. E. Heuser, sales manager, Engine Division, Le Roi Co., Milwaukee, as vice president; R. H. Kerr, chief engineer, Climax Engine & Pump Co., Clinton, Iowa, as secretary; J. D. Cook, secretary and treasurer, Hercules Motor Corp., Canton, O., as treasurer.

Leake Organizes New Company

An engineering organization in the metal stamping field was organized in Monroe, Mich. The new firm, Leake Engineering Co., will operate as an entirely seperate unit from Leake Stamping Co. of that city.

Michigan Tool Buys Building

Michigan Tool Co., Detroit, acquired a building at 1119 E. Ten Mile Rd. in the industrial area of Hazel Park, Mich., to house production facilities of its new Shear-Speed Chemical Products Division.

Expansion at Solar

Solar Steel Corp. awarded a contract for a modern steel warehouse and offices in Cincinnati. James E. Allen of that city is the architect and the contract was awarded to Frank Messer & Sons Inc., Cincinnati.

The plant will have over 50,000 square feet of interior space. Solar will stock a complete line of flat-rolled, bar and tube steel products.

Wheelco Moves Branch Offices

Wheelco Instruments Division, Parber-Colman Co., Rockford, Ill., announces new addresses and the men in charge of the following branch offices: W. Karslo, 338 E. 25th St., Baltimore; E. W. Heffernan, 435 Newtonville Ave., Newtonville, Mass.; H. F. Dahlke, 2561 N. Clark St., Chicago; G. H. Hatfield, 1951 Richmond Ave., Houston; Herb Proske, 66 Hudson St., Hoboken, N. J.; J. W. Hancock, 1433 W. Erie Ave., Philadelphia; Vic Lathers, 1300 Rock St., Rockford, Ill.; H. C. Reimers, 3714 Fourteenth Ave., Rock Island, Ill.; Ken Coates, 1011 Ridgely Bldg., Springfield, Ill.; G. Knowler, 6693 Park Ave., Montreal, Que.

Ending His Career

After nearly 75 years of service in the steel industry, Wallace H. Rowland, 85, (right) retired on pension from Weirton Steel Co., Weirton, W. Va. Receipt of his final pay check from Glenn Gould, tin mill manager, concludes 43 years of employment with this division of National Steel Corp.

Clarkson Opens Toledo Office

Clarkson Engineering (Canada) Ltd. established a sales and service office at 320 Ontario St., Toledo, O., under the name of Clarkson Inc. The company manufactures chucks and milling cutters.

Honor GM's Safety Record

General Motors Corp. won an award of honor from the National Safety Council in recognition of GM's safety record in 1952. Of the more than 423,000 employees, 99.7 per cent lost no working time through occupational illness or injury.

Fairfield Appoints Agent

Fairfield Engineering Co., Marion, O., appointed J. D. Wilson Co., Milwaukee, as its representative in Wisconsin. The firm will represent its Contract Division which designs, constructs and services coal and ash handling equipment and bulk conveying and storage installations.

New Plastics Enterprise

Monsanto Chemical Co., Springfield, Mass., will manufacture polyethylene plastics at a new plant. Annual capacity at first will be about 66 million pounds, with production to begin early in 1955. A 50 per cent increase is expected for 1957.

Site for the manufacturing unit has not been announced.

Move District Office

Orr & Sembower Inc., Reading, Pa., maker of automatic boilers, moved its midwestern district office from Cleveland to 4809 N. Claremont Ave., Chicago.

Offers To Buy Machinery Firm

Compo Shoe Machinery Corp., Boston, offers to acquire the outstanding stock of United Wood Heel Co., and Quirk Machinery Co., St. Louis.

Electroplating Facilities Opened

Bart Mfg. Corp., Belleville, N. J., completed construction of a second new building on its property in Newark, N. J. The building will be used for precision electroplating of heavy industrial equipment being produced for Atomic Energy Commission projects. Additional buildings, totaling about 100,000 sq ft of space, are contemplated for the site where activities of the parent firm and its affiliated companies will be consolidated.

Expansion Projects Approved

Optimism, rather than the pessimism voiced in some areas, is best expressed by the announcement that six Pittsburgh district companies have had their applications approved for rapid tax write-offs totaling more than $4 million. Certificates of necessity were issued to the following metalworking companies: Firth-Sterling Steel Co., $116,592 for special forgings and $199,767 for tool steel; Heppenstall Co., $88,171 for component military end items at New Brigh-

DOWN GOES DOWN-TIME with Permanente 84!

In this report from a major steel mill you'll find convincing evidence that you can drastically reduce down-time for hot repair with Permanente 84 ramming and patching mix.

"Open hearths are operating well under usual heat times. Last month, heat time from tap to tap averaged seven minutes less than the previous best month on record. The use of Permanente 84 has helped cut delay time in half!"

Faster hot repair is possible with Permanente 84 because it's easy to use. Fewer repairs are needed between heats because it gives superior bottom performance.

Act now! Start using Permanente 84 for open hearth and electric furnace rebuilds as well as for bottom, bank and tap hole maintenance.

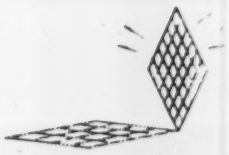
SEND FOR BOOKLET giving all the important advantages of Permanente 84 and the companion material, Permanente 165. Upon request, your Kaiser refractory engineer will promptly offer you research, design and installation service to help you obtain more steel tonnage per year, at lower bottom cost per ton. Call or write principal sales offices: Chemical Division, Kaiser Aluminum & Chemical Sales, Inc., 1924 Broadway, Oakland 12, California. First National Tower, Akron 8, Ohio.

Kaiser Chemicals

Pioneers in Modern Basic Refractories

Basic Refractory Brick and Ramming Materials • Dolomite • Magnesia • Magnesite • Alumina • Periclase

Cheapest "Diamonds" You Can Buy



METAL MARK Penmetal OF QUALITY

EXPANDED METAL

"Air Conditioning" FOR IRONING BOARDS

Experienced housewives prefer Ironing Boards with Penmetal Expanded Metal tops. They're stronger—lighter—non-warping for smoother ironing—"air-conditioned" to minimize pad scorching and accidental fire.

Dealers prefer them because they sell on sight—and for less.

Manufacturers prefer Penmetal Expanded Metal Mesh for countless applications. It's easily formed, shaped and welded . . . weighs less than solid sheets. Costs less, too.

Rid-Jid *Knee Room Adjustable All-Steel Ironing Table. Mfg. by: The J. R. Clark Co., Spring Park, Minn.*

EXPANDED METAL MESH

OPEN TO LIGHT, HEAT AND AIR. PENMETAL expanded metal is the material of economy—for protecting, for screening, for lightweight yet strong construction.

MAKES A LITTLE METAL GO A LONG WAY. PENMETAL expanded metal is sheet metal which has been slit, then stretched to as much as 10 times original area.

CORROSION-RESISTANT METALS AVAILABLE, as well as carbon steel. Large or small mesh, light or heavy gauge. Each sheet is a unit without rivets or welds.

UP TO 80% LIGHTER than solid sheet of same dimensions. Diamond truss pattern adds rigidity and strength.

METAL MARK Penmetal OF QUALITY

For more information, write for Free Bulletin EM50

PENN METAL COMPANY, INC.

GENERAL SALES OFFICES • 205 East 42nd Street, New York 17, N. Y.

BOSTON, PHILADELPHIA, WASHINGTON, PARKERSBURG, W. VA., DETROIT, CHICAGO, DALLAS, LOS ANGELES, SAN FRANCISCO, SEATTLE

Sets Drilling Record

A record of drilling 101 oil wells, averaging 2671 feet deep, in 608 days was established by a rotary rig operated by Rex & Morris, Eldorado, Kans. Members of the crew prepare to add a new length of Soang drill pipe while on location with the rig

---

ton Pa., and $250,000 for forgings at Pittsburgh; Jones and Laughlin, $1,330,000 for rolled steel products at Aliquippa and $601,950 for finishing facilities at Pittsburgh. Others are National Electric Products, $445,464 for ordnance; American Shear Knife Co., $237,763; and Pennsylvania railroad, $819,890 for railway transportation.

Dumas Steel Opens Warehouse

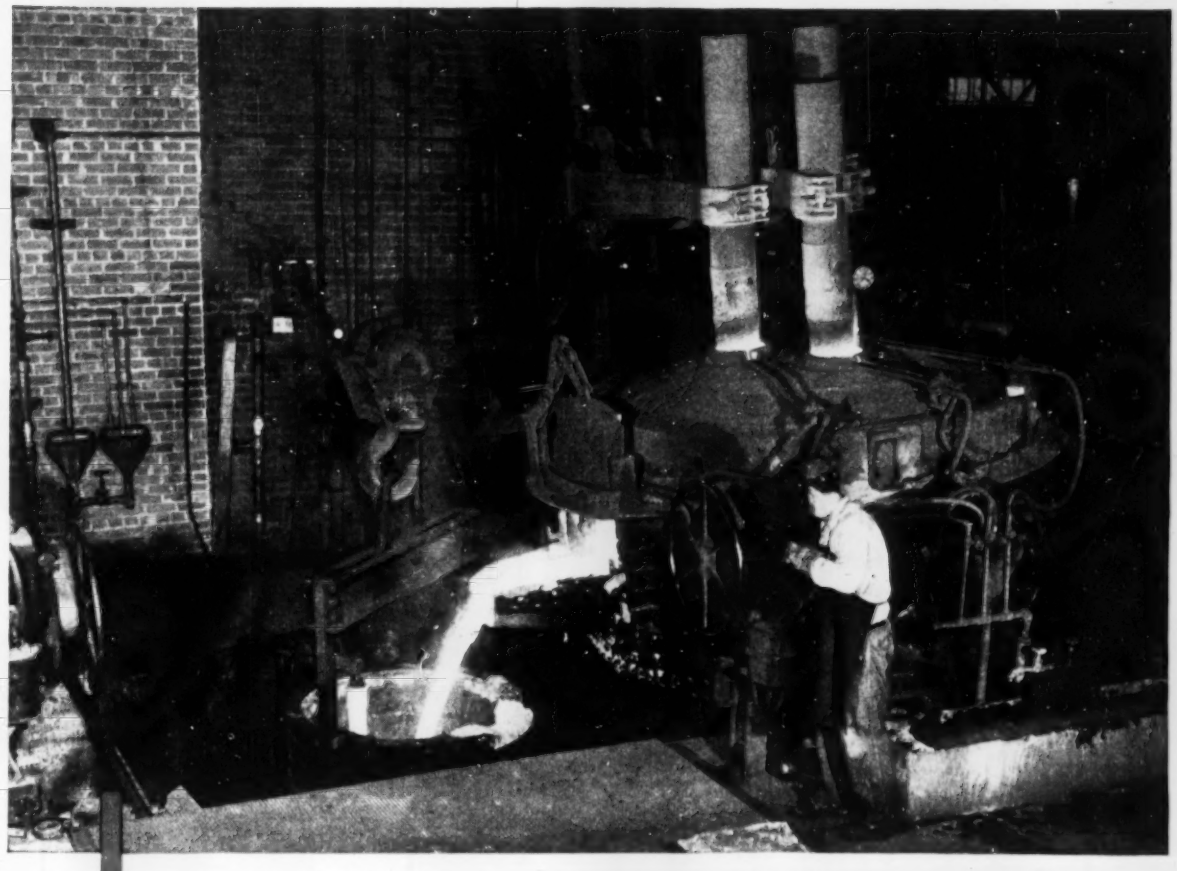
In recognition of the growing importance of the industrial Southeast, Dumas Steel Corp., Pittsburgh, opened a warehouse at Marietta, Ga. The new facility is located in the McNeal building on Sessions street.

Englert Heads Association

Propeller Fan Manufacturers' Association, Detroit, elected the following officers: E. C. Englert, president; E. J. Stone vice president; L. O. Monroe, secretary-treasurer.

Equipment Maker To Expand

Benson-Lehner Corp., Los Angeles, was granted a Small Defense Plants Administration loan of $187,000 for the purchase of equipment needed in development



29-year-old Lectromelt Furnace still hard at work for Dibert, Bancroft and Ross Co., Ltd. of New Orleans, manufacturers of sugar mill machinery, dredge boat machinery and electric steel castings.

"29-year-old Furnace performs like new"

"After 29 years of trouble-free service this Lectromelt* C-18 Furnace looks only a year old. It performs as well as when installed, turning out 8-ton heats in three hours."

Today's Lectromelt Furnaces are masterpieces of engineering compared to this C-18. And you get even greater durability and dependability.

New Lectromelts, of course, are top-charged to save manpower, speed production, cut electrode consumption and give you added lining life. Power supply and power regulation equipment is specially engineered to fit your installation.

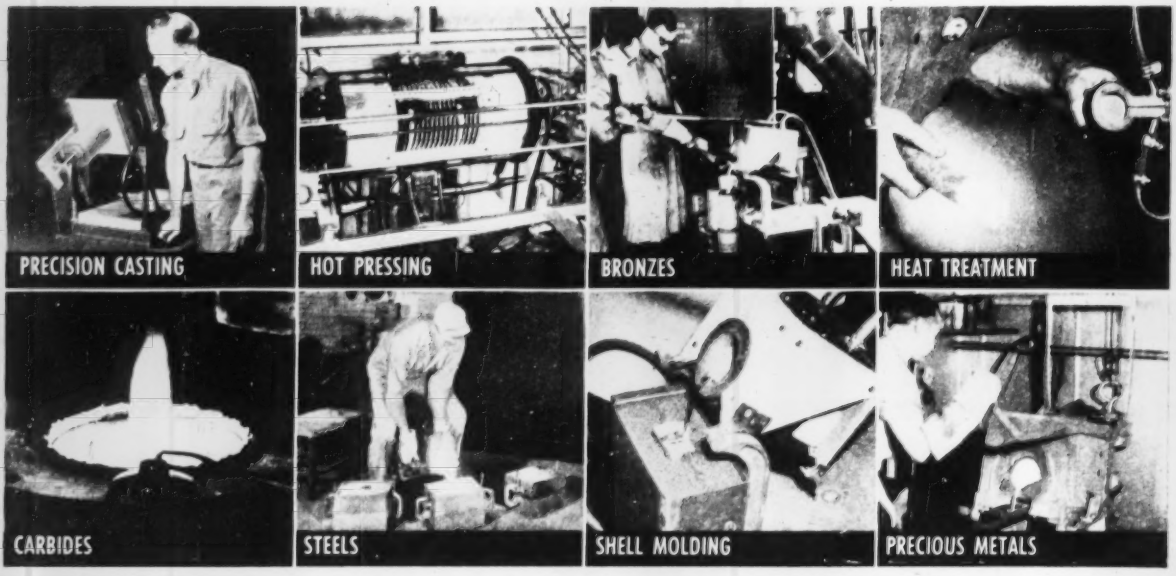
Write for Catalog No. 8, or ask to have an engineer call to discuss your requirements: Pittsburgh Lectromelt Furnace Corporation, 323 32nd St., Pittsburgh 30, Pennsylvania.

Manufactured in . . . CANADA: Lectromelt Furnaces of Canada, Ltd., Toronto 2 . . . ENGLAND: Birlec, Ltd., Birmingham . . . FRANCE: Stein et Roubaix, Paris . . . BELGIUM: S. A. Belge Stein et Roubaix, Bressoux-Liege . . . SPAIN: General Electrica Espanola, Bilbao . . . ITALY: Forni Stein, Genoa. JAPAN: Daido Steel Co. Ltd., Nagoya

*REG. T. M. U. S. PAT. OFF.

MOORE RAPID

WHEN YOU MELT... *Lectromelt*



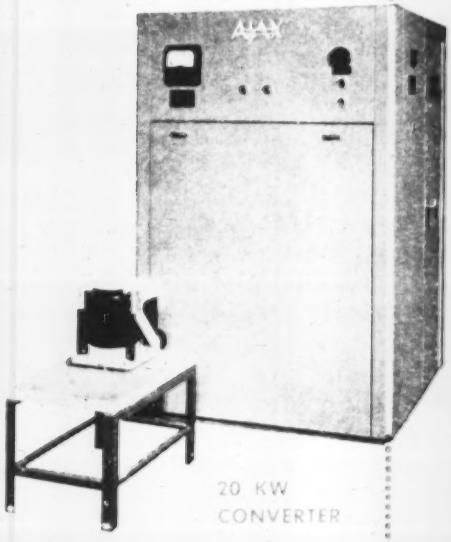
"In Production" — with Minimum Investment

AJAX-NORTHRUP Converter-Operated FURNACES

The 20 kw. converter will melt 17 pounds of steel in 40 minutes. Maximum capacity is 30 pounds of steel or 60 pounds of bronze. The larger 40 kw. unit melts faster, will handle up to 50 pounds of steel. The 6 kw. unit melts a pound of steel in 8 minutes. Controlled temperatures to 4500 deg. F and higher make these furnaces ideal for sintering and hot pressing carbides.

Ajax-Northrup converters are compact and self resonating. They require no special foundation or wiring—and they're certified to meet F. C. C. regulations.

Thousands of these units are in daily use. Many of today's prominent industries actually got their start with an Ajax-Northrup 20 kw. converter. Write for bulletins.



20 KW CONVERTER

Since 1916

AJAX NORTHRUP

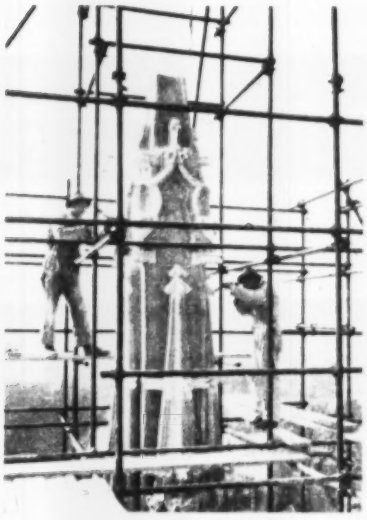
INDUCTION HEATING AND MELTING

AJAX ELECTROTHERMIC CORPORATION
Ajax Park, Trenton 5, New Jersey

Associated Companies

AJAX ELECTROMETALLURGICAL CORP.
AJAX ELECTRIC FURNACE CORPORATION
AJAX ELECTRIC COMPANY, INC.
AJAX ENGINEERING CORPORATION

153



Repairs to Cathedral

Twentieth-century repair techn'ques are applied to a 16th century cathedral at Beauvais, France. Stone cutters Rene Trunde and Francois Pensa work in modern steel scaffolding to repair sculptures on the Renaissance cathedral. Time, weather and war have caused damage to the stone

of electromechanical devices for the Armed Services. The firm manufactures data reduction and data handling equipment, at 2340 Sawtelle Blvd., West Los Angeles, Calif.

Raybestos Enters New Office

Raybestos-Manhattan Inc. moved into a newly constructed Chicago office and warehouse building at 6010 Northwest Highway.

Lindberg Builds Plant

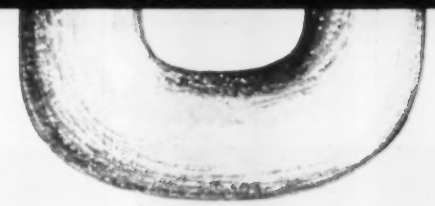
Lindberg Engineering Co., Chicago, established a plant at 11937 S. Regentview Ave., Downey, Calif. The company manufactures industrial furnaces.

Plastics Firm Opens Factory

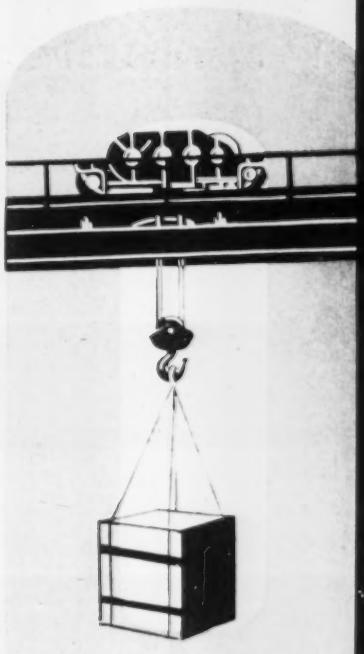
Alladin Plastics Inc., Los Angeles, opened a $1 million plant at 5771 W. 96th St. for manufacture of plastic toys and housewares.

Steel Distributorship Formed

Brown Steel Supply Corp., distributor of flat-rolled products and structurals, was established with offices at 801 Union Bank Bldg.,



is this ⇨ the MISSING LINK?



Strong link in your production chain can be a Conco Crane — custom-designed for a specific need. Conco Cranes are available in the capacity you need, the right lift, the right speed, the right clearances to serve a given station faster, at less cost, with less man power. Conco Cranes are backed by 36 years experience in the design of cranes, hoists, trolleys. Write for Bulletin 3000A illustrating and describing the Conco line.

CRANES HOISTS
CONCO
MATERIALS HANDLING EXPOSITION

CONCO ENGINEERING WORKS
Division of H. D. Conkey & Company
70—14th Avenue, Mendota, Illinois

AFFILIATES:
Conco Engineering Works - Domestic Heating Equipment
Conco Building Products, Inc. - Brick, Tile, Stone

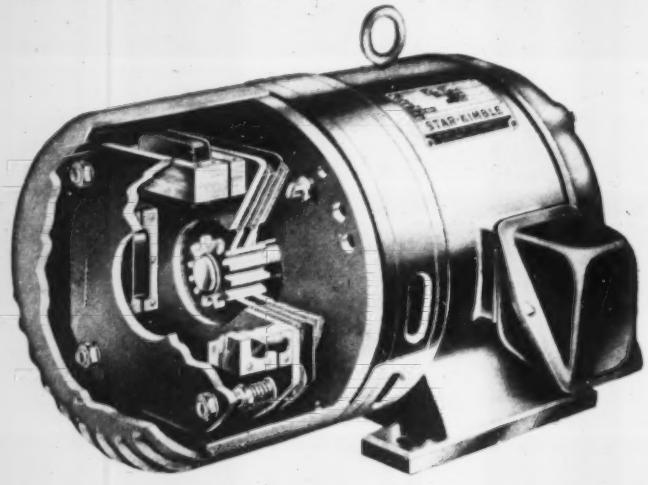
STOP! START STOP! START STOP! START STOP!

START STOP! START STOP! START STOP! START

START STOP! START STOP! START STOP! START

Instantaneous Drag-free

STOPS! STARTS



STOP! START STOP! START STOP! START STOP!

minute after minute YEAR AFTER YEAR with Star-Kimble Brakemotors

That extra-large brakelining area you see brings a Star-Kimble Brakemotor and its connected load to an *extra-fast stop*—as short as a fifth of a second from full speed to standstill if desired.

And the small air gap contributes to *equally fast starts*. Brake is released the instant motor current is switched on—equipment starts without drag.

That's the story of a *single* Star-Kimble stop-start cycle. And the experience of user after user *proves* that Star-Kimble Brakemotors *maintain* the same split-second stops, the same smooth starts, through hundreds of thousands of cycles. In reversing service, conventional plugging methods with a typical 5 hp motor allow only 3 starts per minute. With a Star-Kimble Brakemotor, the figure is boosted to 10!

Of course, every Star-Kimble Brakemotor is a compact, integral unit designed to save space—and give rugged, dependable performance. One manufacturer—one responsibility.

For the full story, write for Bulletin B-501-A

STAR-KIMBLE

MOTOR DIVISION

KIMBLE PRINTING PRESS AND MFG. CO.

220 Bloomfield Avenue Bloomfield, New Jersey

Los Angeles. President is Philip Brown; vice president, James Brown; sales manager, L. W. Westerbeck.

Gets Foundry Association Post

Charles T. Sheehan was appointed executive secretary of National Foundry Association, Chicago. He succeeds Edward J. Walsh who resigned to accept an appointment as executive director of Foundry Educational Foundation, Cleveland.

Forms Hamburg Machinery Co.

Al Hamburg organized a new concern, Hamburg Machinery Co., which will deal in new and used machine tools, parts and accessories. Offices will be at 401 Broadway, New York.

Pioneer Pump Offices Moved

Detroit Harvester Co., Detroit, transferred headquarters and sales offices of its Pioneer Pump Division to 2750 Guardian Bldg., that city, and transferred manufacturing operations to a new plant in Paris, Ky.

Westinghouse Opens Branch

Westinghouse Electric Corp., Pittsburgh, established a branch office in San Francisco under the management of Harold G. Rethmeyer. The branch falls under the supervision of Walter J. Maytham, manager of the company's Pacific Coast district.

Expands Rocket Engine Project

North American Aviation Inc., Los Angeles, leased a new building at 6329 E. Slauson Ave., Los Angeles, for work on the design, development and manufacture of rocket engines.

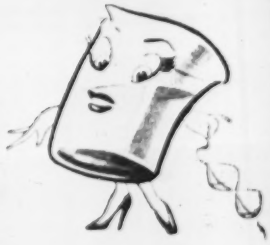
Hoyt Opens Wire Cloth Plant

Hoyt Wire Cloth Co. is producing a line of aggregate wire screens and industrial wire cloth in its plant in Lancaster, Pa. The new company purchased its machinery from John A. Roebling's Sons Co., Trenton, N. J. Officers of the firm are F. G. Hoyt, president; W. Hobbs

NEW SOLUTIONS FOR OLD FINISHING PROBLEMS

ENTHONE CAN SHOW YOU HOW TO DO ANY OF THE FOLLOWING:

1. Remove rust and scale from steel in an alkaline solution ***without any attack on the steel***
2. Strip nickel, lead, tin, solder, silver and copper from steel without any attack on the steel
3. Electroplate on aluminum for soldering
4. Remove excess silver solder from steel
5. Phosphate and clean steel in one operation
6. Prevent rusting of steel during drying or storage
7. Shorten alkali cleaning time to seconds.
8. Strip enamels from plastics
9. Remove heat scale from copper alloys without etching the base metal
10. Chromate zinc and cadmium for high salt spray resistance

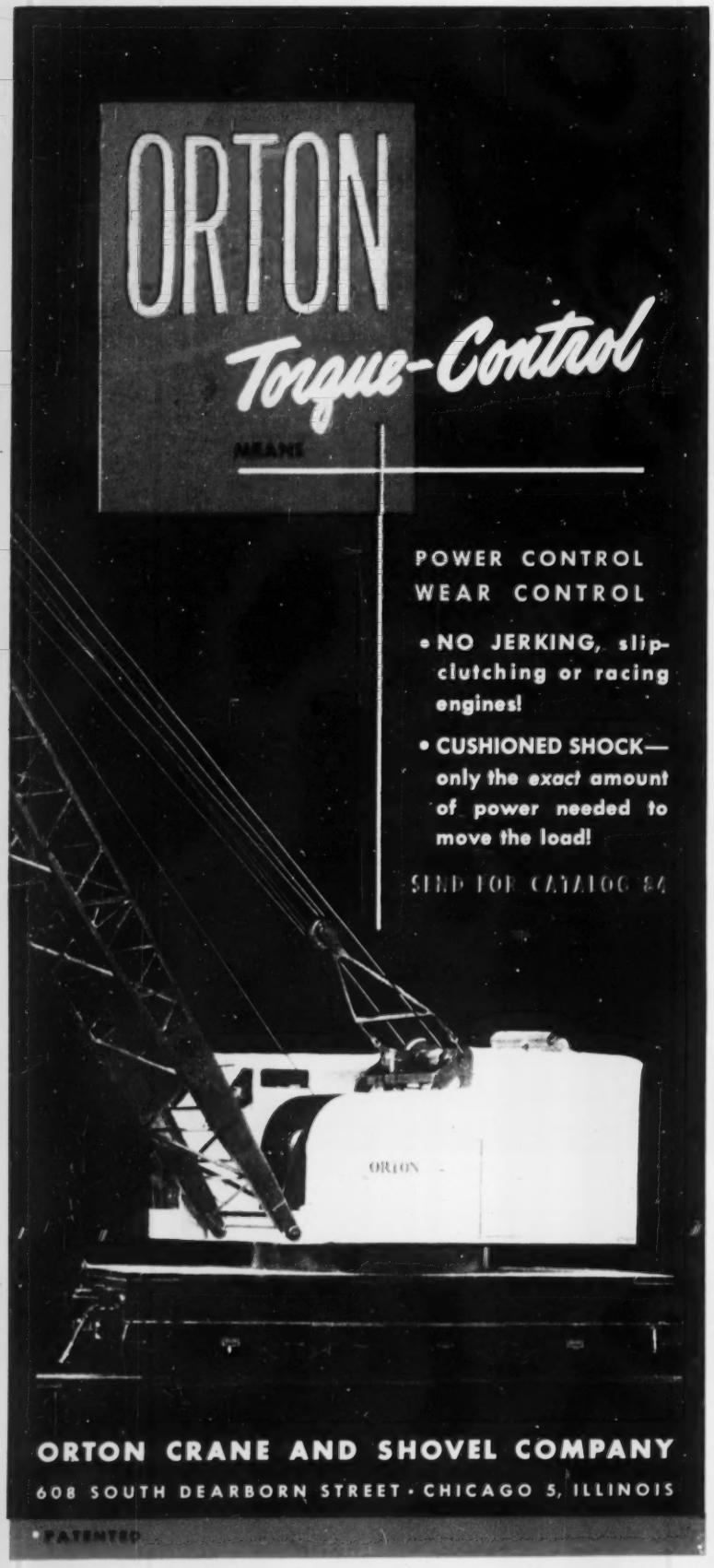


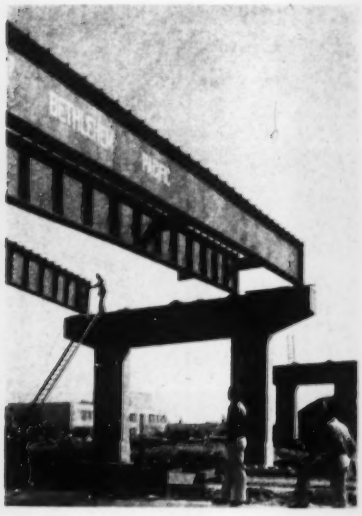
KEEP UP TO DATE. *Write for check list of Enthone literature on over 60 products and processes for better metal finishing.*

ENTHONE
INCORPORATED
442 ELM STREET
NEW HAVEN, CONNECTICUT

METAL FINISHING PROCESSES

ELECTROPLATING CHEMICALS





Surmounts Traffic Snarls

Leapfrogging across the future extension of the Ramona Freeway in southern California, 11-ton bridge girders are raised for a street crossing in Alhambra. Fabricated in 90-foot sections, the 15 girders are of all-welded construction and were erected by Bethlehem Pacific Coast Steel Corp.

Jr., vice president and sales manager.

Trent Heads Galvanizers Group

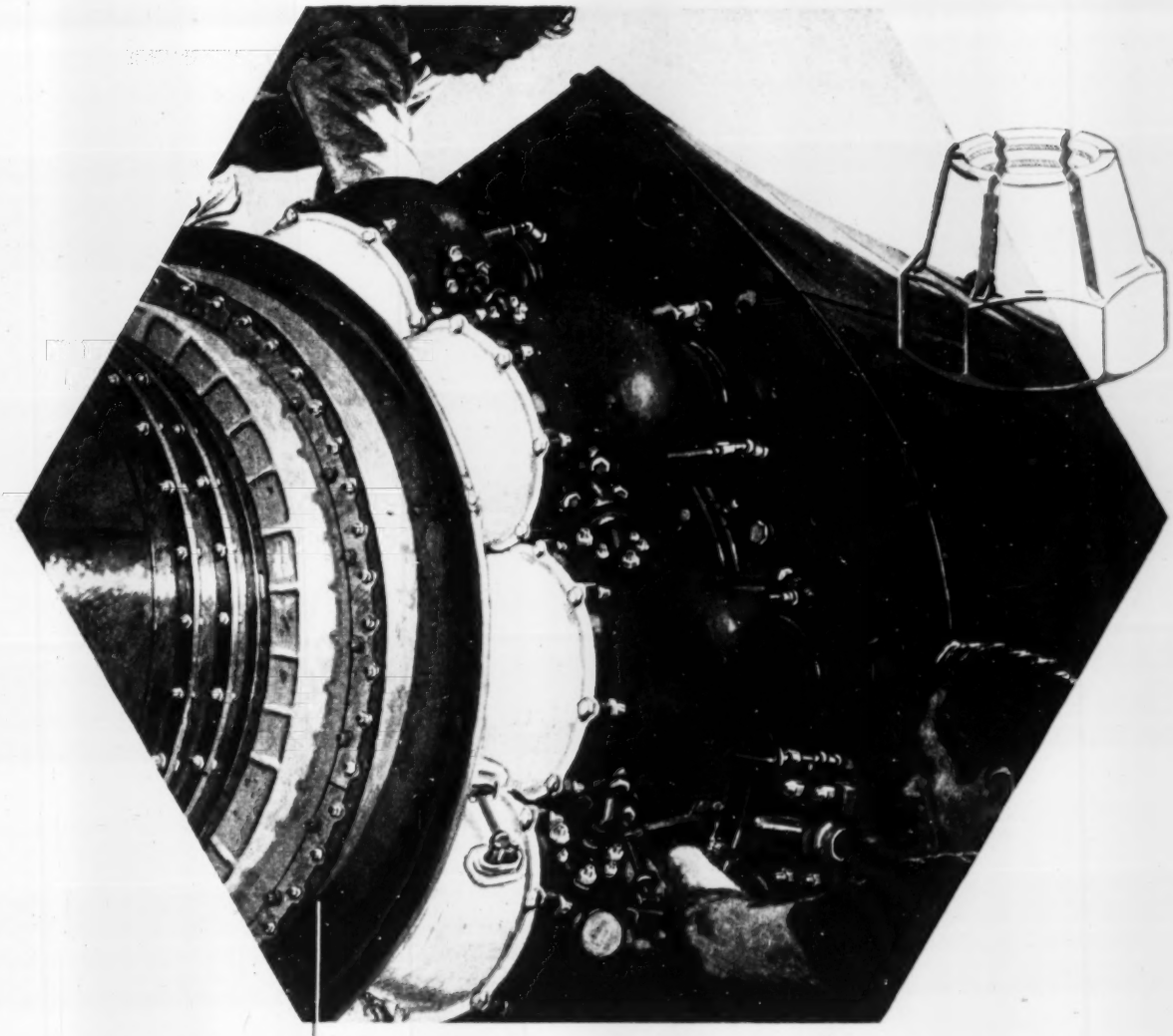
American Hot Dip Galvanizers Association, Pittsburgh, elected Bonnie E. Trent as its president for the term ending in March, 1954. Mr. Trent is general foreman of the galvanizing and shipping section of the formed products department of Armco Steel Corp.'s Fabricating Divison.

Ross Carrier May Change Hands

Clark Equipment Co., Buchanan, Mich., may acquire a substantial interest in Ross Carrier Co., Benton Harbor, Mich. Michigan Power Shovel Co. is a subsidiary of the Ross firm, manufacturer of straddle trucks, power shovels, excavating equipment, and fork lift trucks.

Open House at Heppenstall

Heppenstall Co., Pittsburgh steel forgings manufacturer, will hold a two-day open house beginning May 12. C. W. McQuiston, director of personnel, is chairman of the planning committee.



Type Z1200...extra length locking beams. Recommended for prolonged service at temperatures up to 1200°F. Superior locking effectiveness assured on bolts at the tolerance limit of Class 3.

Every major aircraft engine made today relies on the vibration-proof holding power of Elastic Stop Nuts.

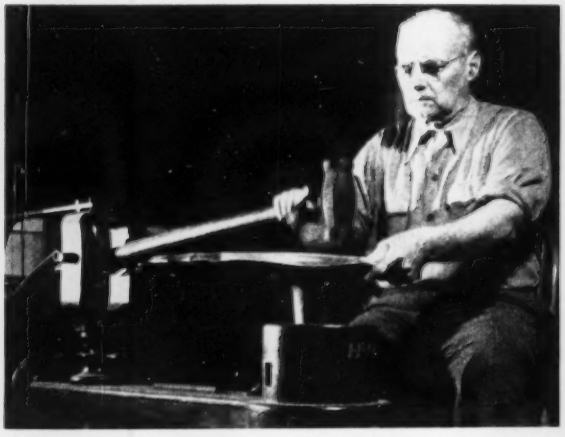
ESNA®
TRADE MARK

ELASTIC STOP NUT CORPORATION OF AMERICA

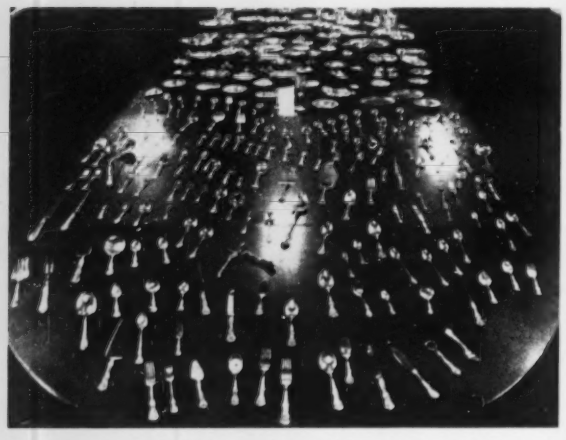
Dept. N22-460, 2330 Vauxhall Rd., Union, N. J.

Only ESNA manufactures a complete line of all types and sizes of self-locking nuts to meet operating temperature requirements ranging from −65°F. to 1200°F.

Sterling silver flatware pieces are punched out on an interlocking blanking machine as first production step



Bottom of a tray is "set" by means of a counterbalanced trip hammer which both levels and hardens the silver



Variety demanded in sterling silverware production is emphasized by more than 100 different pieces on this table

Silverware for Moderns

Machine-age production methods come slowly in the centuries-old craft of silversmithing

SILVERSMITHS at Reed & Barton, Taunton, Mass., practice an art that was ancient when Rome burned, but their products grace modern tables. The company, one of the oldest of the baker's dozen American firms which produce sterling flatware and hollow ware in volume, uses methods which have changed little from ancient times, although mass-production methods are creeping in.

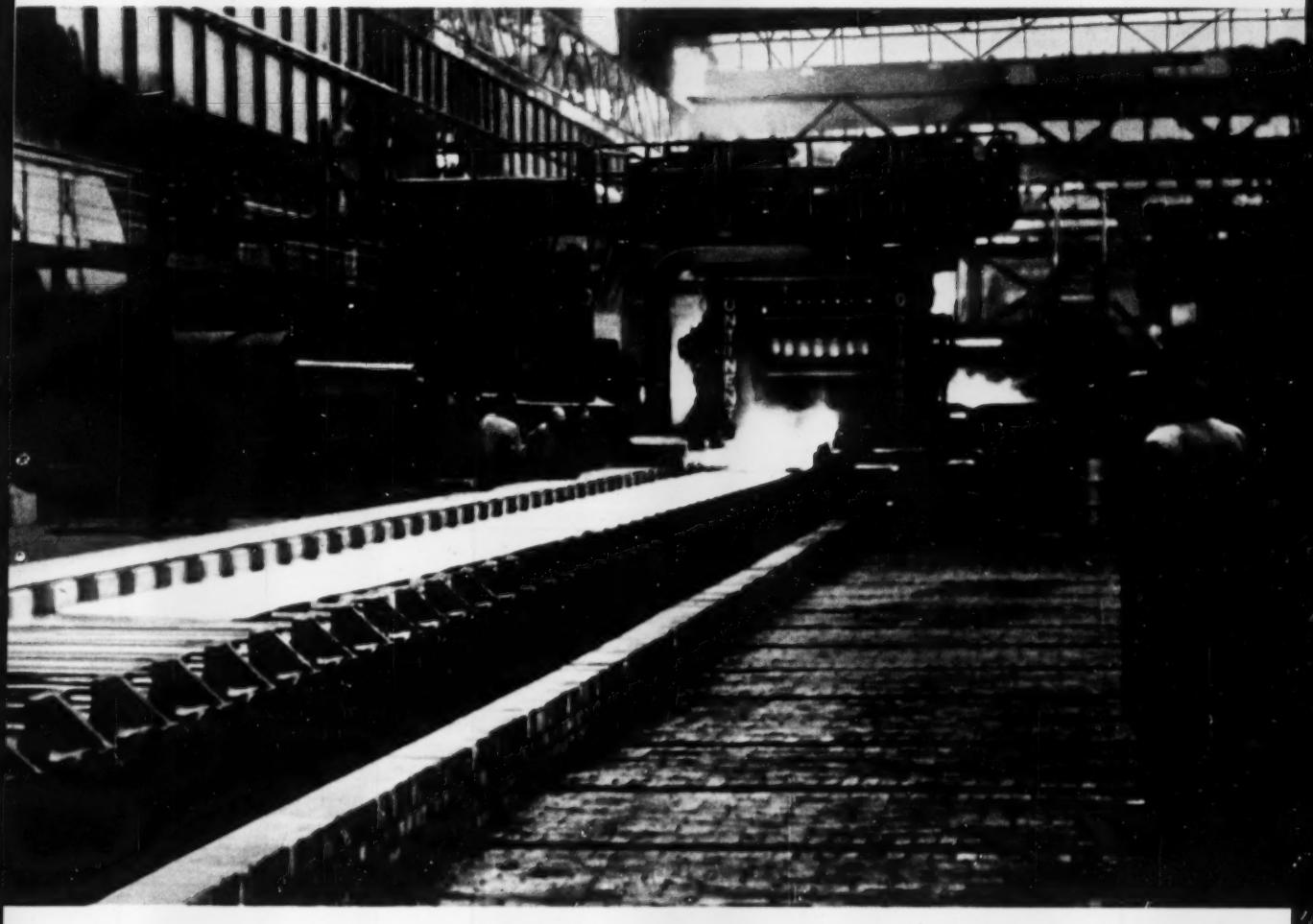
Flatware—knives, forks and spoons—are now blanked out of silver stock by punch presses, but the finishing operations are still largely hand work. Hollow ware—bowls, goblets and plates—are still made almost entirely by hand, even to the initial forming of the pieces.

Hand chaser hammers a design into a sterling bowl filled with pitch to keep his punches from cutting too deeply

Inside surfaces of each fork tine must be individually polished by hand on an emery belt grinding machine

CONTINENTAL

FOUR-HIGH REVERSING MILL



Complete Rolling Mill Installations

★ ★

SLABBING MILLS
UNIVERSAL MILLS
PLATE MILLS
HOT STRIP MILLS
COLD STRIP MILLS
TEMPER MILLS

Mills complete with Auxiliary Equipment

★ ★ ★

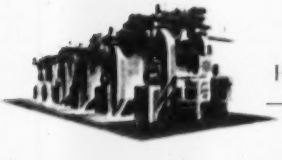
CONTINENTAL CHIPPER
ROLL LATHES
SPECIAL MACHINERY

BLOOMING MILLS
STRUCTURAL MILLS
RAIL MILLS
BILLET MILLS
ROD MILLS
MERCHANT MILLS

CASTINGS carbon and alloy steel from 20 to 250,000 pounds

ROLLS iron, alloy iron and steel rolls for all types of rolling mills

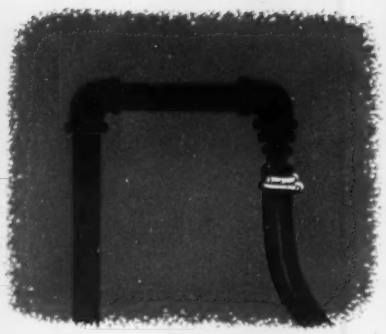
WELDMENTS fabricated steel plate, or cast-weld design.



Plants at
East Chicago, Ind. • Wheeling, W. Va. • Pittsburgh, Pa.

CHICAGO • PITTSBURGH

CONTINENTAL
Foundry & Machine Company

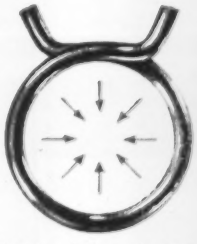


How to design economy in your hose connections

Specify Eaton Reliance

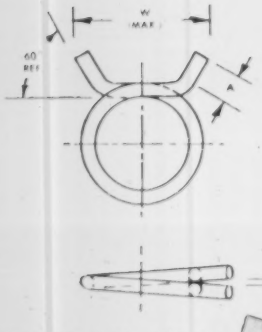
"HOZ-FAS-NERS"

Here's a new and easy method of fastening rubber, fabric or plastic hose to connections that is rapidly being adopted by many industries. Manufactured as a complete one-piece unit, Reliance Hoz-Fas-Ners are made from special spring steel, are low in unit cost and extend effective hose use—write for complete engineering facts today.



"Built-in Uniform tension for constant tight seal"

SAMPLE SIZES OF STANDARD RELIANCE HOZ-FAS-NERS AVAILABLE



Eaton Number	Size Hose O. D.	Wire Diameter	"A" Dimension	"B" Dim. (Max.)	"W" (Max.)
ER 6	3/8	.082	1/4 — 5/16	1/32	3/4
ER 10	5/8	.107	1/4 — 5/16	1/32	1
ER 13	13/16	.117	1/4 — 5/16	1/32	1 1/8
E 9	15/16	.122	1/4 — 5/16	1/32	1 1/4
E 10	1	.132	1/4 — 5/16	1/32	1 11/32
ER 18	1 1/8	.152	5/16 — 3/8	1/32	1 7/16
E 16	1 3/8	.162	5/16 — 3/8	1/32	1 3/4
E 20	1 5/8	.172	5/16 — 3/8	3/64	1 7/8
E 26	2	.177	5/16 — 3/8	1/16	1 15/16
E 30	2 1/4	.182	5/16 — 3/8	3/32	2 1/8

WRITE FOR FREE SAMPLES

Request your samples of Reliance Hoz-Fas-Ners and a copy of Engineering Folder #1 by writing us today.

RELIANCE DIVISION

EATON MANUFACTURING COMPANY

OFFICE and PLANTS: 514 Charles Ave. MASSILLON, OHIO

SALES OFFICES: New York • Cleveland • Detroit • Chicago • St. Louis • San Francisco • Montreal

Production AND Engineering NEWS AT A GLANCE

INSTANT PHOTOMICROGRAPHS—The Land photographic process that has gained wide popularity among amateur photographers is being efficiently applied to Bausch & Lomb photomicrographic equipment. A finished print is obtained direct from the camera about a minute after exposure. The process is ideal when many routine photomicrographs are required and a filed negative isn't needed. Some other benefits are: Roll film is used, camera is loaded in daylight, finished print is removed in daylight without disturbing the photomicrographic setup and short-lived material can be photographed with varying exposures and focuses in the time required to expose and develop one conventional negative.

MAGNETIC ATTRACTION — Improvements in permanent magnets, both in materials and techniques, are drawing more and more metalworking operations into this material's field. Restrictions on the use of nickel and cobalt to stretch out critical materials rather than shortages of manufacturing capacity are bottling up expansion into newer fields. An understanding of how magnets are made and the various forms available will assist product designers and management in determining what areas can best be served by specific magnets. p. 110

WIDE HORIZON—Structural adhesive applications have been largely confined to the aircraft industry where the weight saving is of considerable value. O. W. Loudenslager, manager research and development, Goodyear Aircraft Corp., predicts that as further research and development make cost reductions possible high-strength metal-to-metal bonding will spread throughout all branches of industry. Shipbuilding, railroad equipment and automotive industries seem to be meat for the adhesives market.

FORGING AHEAD—Excellent progress on an atomic powered submarine and very satisfactory progress on an atomic powered airplane is the way some members of the Joint Atomic Energy Committee have recently described the status of these atomic projects.

BETTER NITRIDING—Expanding use of nitriding is due to the increasingly rigid demands of applications where combination of wear and fatigue resistance is particularly important. Nitrided parts are usually ground and lapped in order to remove the brittle outer white layer. If the normal atmosphere of 30 per cent dissociated ammonia is used, the depth of this white layer is from 0.001 to 0.002 inch. By applying conditions of the Floe process final grinding or lapping operations can be eliminated by reducing the depth of the white layer to the point where it does not tend to chip or spall but instead acts as an ideal wear-in surface. Normal nitriding practice is used with the exception that the cycle is divided into two stages: First stage is carried out at 975°F and 20 per cent ammonia dissociation. Then the temperature is raised to 1050°F, and the ammonia dissociation increased to 85 per cent. The time at heat for each stage varies with the case depth desired.

LOW COST GEARS—It takes ingenuity to produce short lots efficiently. That such production is possible is evidenced in the method used in fabricating steel drive gears at Cincinnati Shaper Co. A quick setup system uses a press brake with a wedge action die to form the rims. Less than 2 minutes are required to form rims 35½ inches in diameter. The rims, hubs and web cut from steel plate are then joined by submerged welding to form the gear blank. p. 114

LONGER WHEEL LIFE—Flanges, improperly mounted, can be the source of a lot of grinding wheel troubles and often are the explanation for unusual wheel breakage. Norton Co. grinding specialists warn against violating the safety code by failing to key the inside flange to spindle. Flanges can develop terrific pressures against the wheel and even spring so the inside relieved edge, in effect, becomes a "cookie cutter." For proper wheel operation flanges must be flat, relieved, free from any burrs, both the same size and above all the inside flange that drives the wheel must be secured to the spindle in some way.

ELIMINATING GUESSWORK — Galling and seizing of stainless steel surfaces moving over one another is a difficult problem but there hasn't been too much information available leading to its solution. Ordinary lubrication methods often will not work because of the danger of product contamination. A new test method developed by Armco Steel Corp. establishes galling load points for most stainless steels and will do much to take the guesswork out of selecting the proper steel for a particular application. p. 150

ROCKETS TO SHOCK MOUNTINGS—Initially developed to accommodate the expansion and contraction of solid propellent in Navy rockets, Vibraglass, a shock and vibration absorbing resilient board material, is making a ready adjustment to civilian life. Its industrial uses include applications in vibration absorbing mounts for light and heavy machinery, electric motors and radio equipment computing instruments and vibration muffling strips in forced air furnaces. The compressed and bonded glass fibers support vibrating loads as great as 2000 psi at temperatures ranging from minus 100°F to 375°F. Basic components can be varied with respect to resiliency, spring rate, vibration absorption characteristics and space requirements.

Metalworking Outlook p. 59 Market Outlook p. 179

The larger Alnico permanent magnets, produced by sand casting, are heat treated by this direct current electromagnet before they are magnetized

Permanent Magnets Attract More Industry Attention

Improved magnetic materials and powder metallurgy techniques have removed size and shape barriers. The current bottleneck is civilian shortage of nickel and cobalt

By ERNEST E. GEORGE
Manager, Design and Application Engineering
Carboloy Department
General Electric Co.
Detroit

PERMANENT MAGNETS are steadily drawing more and more metalworking jobs into their magnetic field. By 1957 the pull of permanent magnets will be felt in the metalworking industry from the power plants and tool rooms of many factories to the major mining areas of the nation; from manufacturing production control centers to highly automatic materials handling setups.

In spite of government restrictions on the metals employed in producing magnets in both World War II and the present Korean war, magnet uses in industry are much wider than they were 10 years ago. One reason is that the major portion of permanent magnet development took place in recent years. More magnet materials were developed since 1939 than in all previous history.

Not New—Before 1930 magnetic properties of permanent magnets depended on the physical hardening of steel or its alloys. Since then magnets with vastly superior properties, hardened by other metallurgical methods, were developed. The modern magnet not only is produced in almost unlimited sizes and shapes but, if the metals involved in its production—aluminum, nickel, cobalt, iron, sometimes copper and titanium—are used in the correct ratio, the magnet, properly applied, retains its magnetic strength, not for a while, but permanently.

Today, because of the Korean action, expansion of permanent magnets into some newer metalworking fields is temporarily bottled up—not by the shortage of production capacity—but by the government's efforts to stretch out critical materials.

Lots of Capacity—Industry-wide, there is plenty of manufacturing capacity, especially for permanent magnets of the Alnico type. The picture looks even rosier for this spring when Carboloy opens its new magnet production facilities in Edmore, Mich.

Materials-wise, the situation is a little tighter since both nickel and cobalt, used in the manufacture of magnets, are on the critical list. Although cobalt is becoming a little more plentiful, it still is restricted and allocated on request. Nickel is tighter: Like cobalt, it too is restricted and allocated on request. Although there are no signs now of added restrictions or shortages, regulations will be on for some time.

Military First—Currently about 80 per cent of the permanent magnets produced go into first line military applications—military radio, radar and other electronic applications. Television, commercial radio and industrial applications take the remaining 20 per cent. Some newer applications, some fully developed and others under development with government approval in the food and ore mining industries are beginning to take a greater share of the 20 per cent.

Today there are eight grades of permanent magnets of the Alnico type available for metalworking applications. These include properties to meet a wide range of industry needs. Original development work on this particular family of alloys, the Alnico, was carried out by the General Electric Co.

Castings or Powder—To meet the various applications in the metalworking industry, permanent magnets are fabricated by two methods—by sand casting and by powder metallurgy. All grades may be cast to shape by the former method. It's the most economical for magnets of simple design and weighing over 15 grams.

Those produced by powder metallurgy, the sintered Alnico magnets, can be produced to relatively close tolerances without additional finishing. Although all eight grades of Alnico magnets may be cast, only Alnico 2, 4 and 5 are made commercially in sintered form.

Sintered Better — Magnets produced by the powder metallurgy method are fine grained, thus have more uniform flux distribution and greater mechanical strength than those cast. In many cases, the mechanical properties of sintered magnets make size considerations secondary. For example, Alnico rotors weighing about 25 grams and about 1-inch diameter, have been produced in large quantities and have given outstanding performance at speeds as high as 100,000 rpm.

Sintered magnets also are well adapted to mass production of small magnets with intricate shape. They are made by pressing a mixture of constituent metal powders in a die to approximately the final shape of the magnet, and holes, slots or grooves are included in the same operation.

Design Important — Designing permanent magnets is a highly specialized field. Each end-use must be considered individually. There is little standardization in design except in a few instances such as speaker magnets and some sintered magnets of general purpose uses.

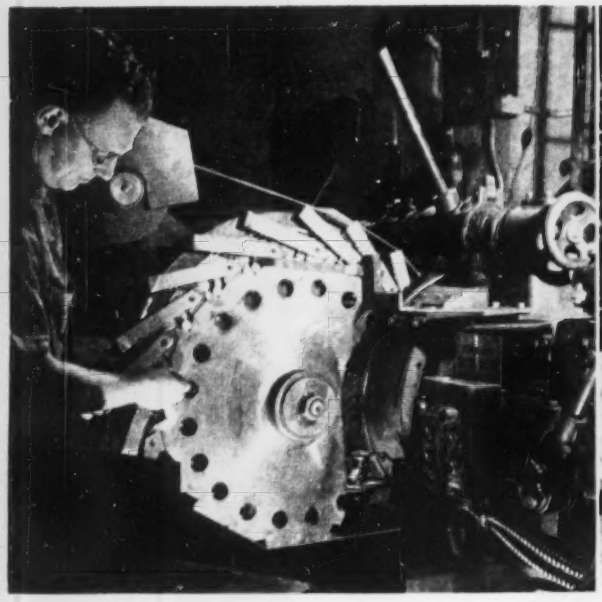
Since length of the magnet determines the available magnetomotive force, and the cross-sectional area limits the total flux, space requirements often dictate the material to be used.

Often the product designer wishes to improve an old design by substituting a high energy material for one of the earlier types of magnets such as chromium or cobalt steels. A radical reduction in magnet length is possible because the newer materials have a higher magnetomotive force per unit length.

Tight Quality Control — Besides being properly designed, permanent magnets must undergo quality control throughout production. Magnets properly processed are inherently very stable with respect to time unless acted on by a demagnetizing force in excess of that provided for in original application design. Some of the demagnetizing influences include heat, vibration or impact, stray magnetic fields or

FACTORS TO CONSIDER FOR SPECIFIC APPLICATIONS

1. What magnet length and cross-sectional area will provide the necessary flux across the gap?
2. Will material selected fit into the space available?
3. Will circuit and magnet arrangement provide maximum output per unit volume of material?
4. Does the permanent magnet material have suitable physical properties?
5. Will magnet withstand demagnetizing influences to which it may be subjected?
6. What is the cost—considering both magnetic and mechanical requirements?



In the grinding operation, both ends of the magnets are ground simultaneously by double-face grinder shown here

Actual job of magnetizing these small sintered permanent magnets is done by hand on this bench-type magnetizer

changes in the external magnetic circuit such as an increase in air gap length. Correct stabilizing treatments sometimes are necessary to insure permanency.

The effect of high temperatures on magnetic materials depends upon the internal structure and the metallurgical properties of the alloy used. The effect of vibration and impact is similar to that of high temperature in that it depends on the internal structure of the magnet material. Strains set up by vibration or impact produce varying amounts of magnetic instability of the molecular structure due to the breakdown of feebly oriented molecular groups.

There is a permanent demagnetization effect when a magnet is subjected to sufficient vibration or impact. The demagnetization effect of stray magnetic fields depends on the coercive force of the permanent magnet material.

Flux Alterations—If steel or other magnetic materials accidentally touch the sides or back of a magnet, they establish additional poles thereby altering the flux distribution of the magnets to some extent. Nonmagnetic covers are used in some cases to protect the surfaces of magnets.

Magnets that must withstand high heat can be initially subjected to a temperature cycle that duplicates that encountered in actual use. Those that must resist vibration can be initially exposed to similar vibration ranges in operating conditions. Thus permanent magnet materials can be stabilized so that continued application of the demagnetizing influence has no further effect. Once so stabilized, they supply a constant and uniform source of magnetic energy indefinitely.

All Shapes — Holding magnets exist in a great variety of geometries for use in relays, novelties, armatures, magnetic chucks and latches. Fundamentally, the work that the magnet does is proportional to the volume of magnetic material used and available energy of the material.

The manner in which force and distance are used is controlled by the design of the holding structure. The contact pull on a piece of steel is a special case and depends solely on flux density squared, and area of pole contact.

In all holding and attracting applications, it is important to remember that the object to be attracted or held may be the limitation on the amount of attractive force that can be developed. Holding magnet performance is always contingent on the keeper being able to conduct the total flux output of the magnet. For thin metal and small particles, the maximum force of attraction is inherently limited. A one-pound magnet can hold a razor blade with as much force as a 10-pound magnet.

Good for Cleaning—If you're a plant engineer, you probably are already familiar with the use of permanent magnets in separator applications—either in cleaning coolants in machining operations or picking up magnetic foreign material in cleaning sand or coal. Formerly, it was a daily chore to clean coolants in grinding and other machining operations. Many times cleaning was necessary during the production period, increasing down time for the department. Today, permanent magnets keep coolants so clean that machines run all week without a coolant change.

In the metalworking field, permanent magnets not only cut down product size and improve performance at less cost, but also serve to step up processing. One manufacturer of meters, for example, with increased know-how of magnet behavior redesigned its meters to take a more powerful magnet. The results were all on the plus side. The overall weight of the magnet itself was cut roughly by 35 per cent, cost dropped about one third

and the increase in the gap flux density provided a 15 per cent increase in the torque of the meter movement.

Separate Sheets — For years, manufacturers were troubled with the feeding of sheets into forming machinery. Often the rust preventing oil film between steel sheets exerts an adhesive force, strong enough to hold adjacent sheets together.

Today the problem of doubles is eliminated by a magnetic sheet steel separator. The job actually is done by an Alnico 5 magnet cast in aluminum. The aluminum covering protects the magnet from physical abuse as well as magnetic particles.

While a stack of steel sheets is in effect a solid steel mass, it is made up of several separate sheets. Each pole face of the separator magnet induces poles of opposite polarity on the edge of each sheet. Like poles are induced in a vertical direction, repelling each other and causing separations between sheets.

Many Other Uses — Permanent magnets also are used in conveying or materials handling operations. They may be employed either as holding devices to keep work in alignment on conveying lines, or in place of hooks on overhead setups where light metal parts are being attached for conveyance to pickling, finishing or shipping areas.

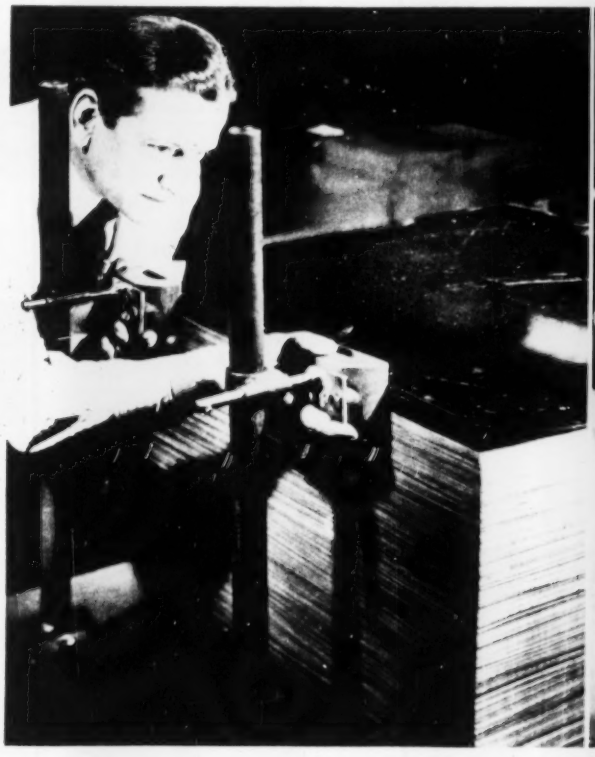
They also are used in connection with fixtures, or as part of a fixture, for example, in holding several components in position for assembly; or for holding metal sheets in a rigid position without any sag during shearing operations. Plant layout work also is simplified by permanent magnets. Fastened to the bottom of templates or models, the latter are used on metallic layout boards and stay put unless purposely removed.

User Problems—One of the biggest problems confronting the user of permanent magnets is the choice of a method for assembling the magnet to its pole members or other steel parts. For a while, the problem limited applications. But with current fastening methods many new applications are falling into the magnetic field.

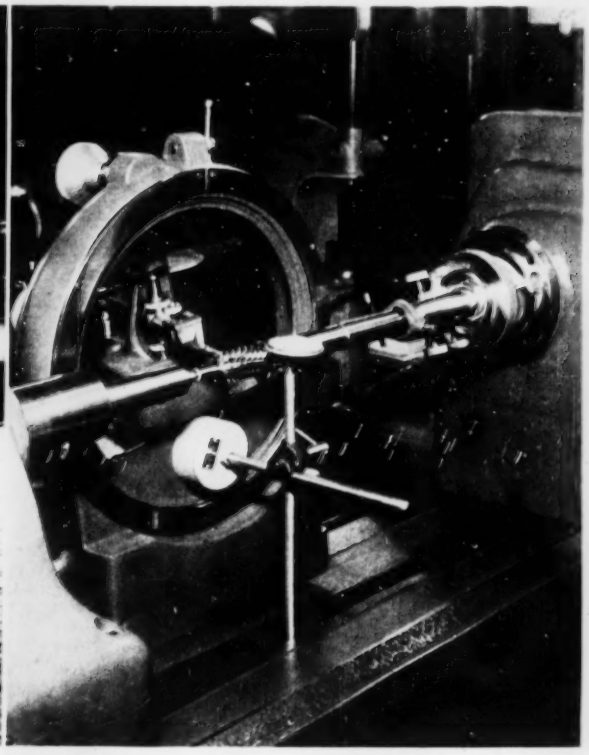
Mechanical clamping, soldering or cementing are the most popular means of fastening slots and holes, and provide a positive means of holding assemblies together. Simple brass straps around the magnet, which in turn are fastened to other parts of the assembly often can be used. Rotor type magnet assemblies for magnetos and generators, including the shaft, are commonly die cast together. Often the die metal completely surrounds the assembly, except for pole shoes, and acts as a shell that provides support at high rotational speeds.

Carboloy permanent magnets can be bonded successfully by solder providing the surfaces of the magnet are properly prepared. Each of the eight grades contain aluminum oxide on their surfaces. This must be removed, and the surface kept clean until solder is applied.

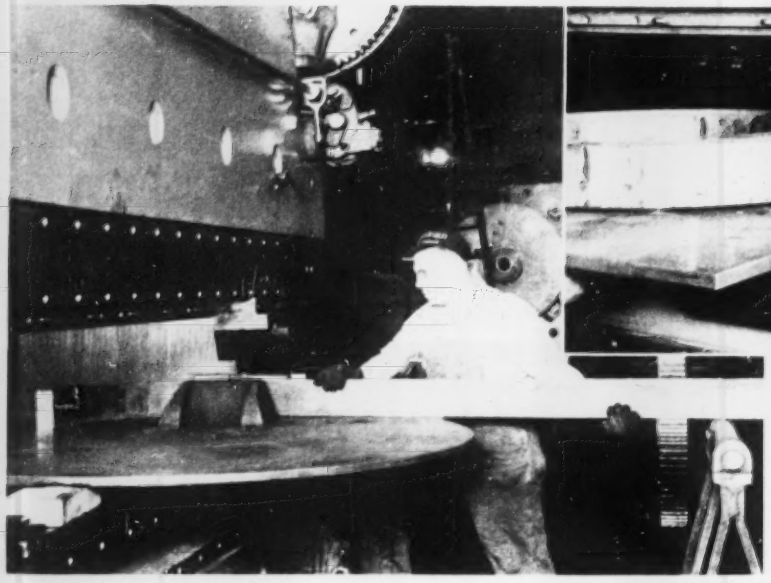
A process in which castings are dipped in a molten salt bath at 1000° F and electrolized, can be used in cleaning aluminum oxide from magnets. Magnets can also be plated with cadmium or copper.



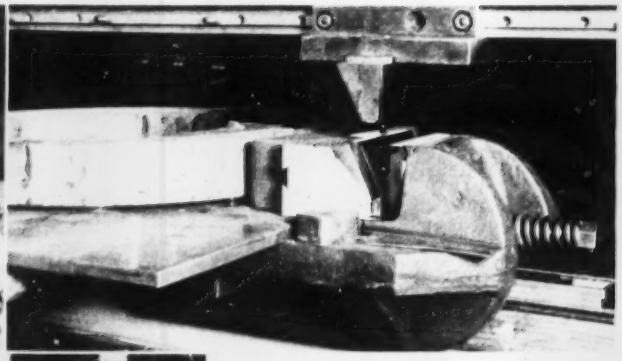
Application of permanent magnets on this sheet steel separator prevents stamping or drawing of double sheets



In this application, a permanent magnet is being employed to hold a dial indicator on the measuring machine



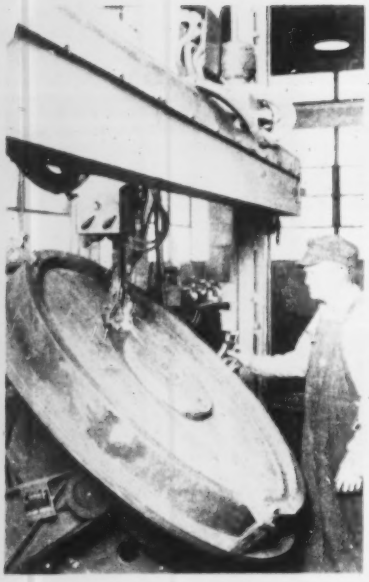
Steel gear rim is formed on a press brake with a wedge-action die. Outboard roller support is shown at right



Closeup view shows how wedge drives moving member of die in horizontal plane. Repeated blows do the trick

Steel Gears Produced in Short Lots

Torch cutting, press brake with an ingenious die, and some welding prepare the gear blank for machining. It's a quick setup, low investment system for making large gears



Hub, web and rim are located on a positioner. Automatic submerged flux welding machine welds three together

SHORT-LOT jobs can be run efficiently but it sometimes takes a bit of old-fashioned ingenuity.

Fabrication of steel drive gears at Cincinnati Shaper Co., Cincinnati, is a good example. The whole sequence includes some flame cutting, welding, forming and machining.

Cuts Webs — First step in the gearmaking operation is burning the circular webs out of steel boiler plate. Two identical webs are burned out of a rectangular piece of plate and then the centers are burned out of these for the gear hub.

Next step is the forming of the steel rim in which the teeth will be cut. Here, Cincinnati's knowledge of their press brakes was put to work. The answer is a simple but effective wedge-action die.

Horizontal Shove—Hot-rolled 35-45 carbon steel bars with a 2 x 4-inch cross-section are fed horizontally into the die. As the ram descends a wedge is driven into a recess in the die—translating vertical into horizontal motion.

This horizontal motion is actually the work stroke, and it permits the large rims to be formed in the horizontal plane. An outboard roller support helps the machine operator hold the steel bar in position and a circular steel table is fixed to the bed of the brake for supporting the bent rim as it feeds out of the die. A series of repeated blows forms a rim 35½ inches in diameter in less than 2 minutes.

Web, rim and hub meet in the weld shop for final assembly. Here they all are located on a positioner. Automatic submerged flux welding machine welds them into one unit.

Following welding the parts are stress relieved and then go on for the machining operations which turn them from blanks into large drive gears.

NO NEED FOR SEVEN LEAGUE BOOTS FOR BIG LEAGUE STEEL SERVICE

Just one, easy step puts you in touch with a wealth of tooling and production help. When you call your Carpenter Mill-Branch Warehouse or Distributor you set a team of steel specialists to work on any of your requirements involving specialty steels.

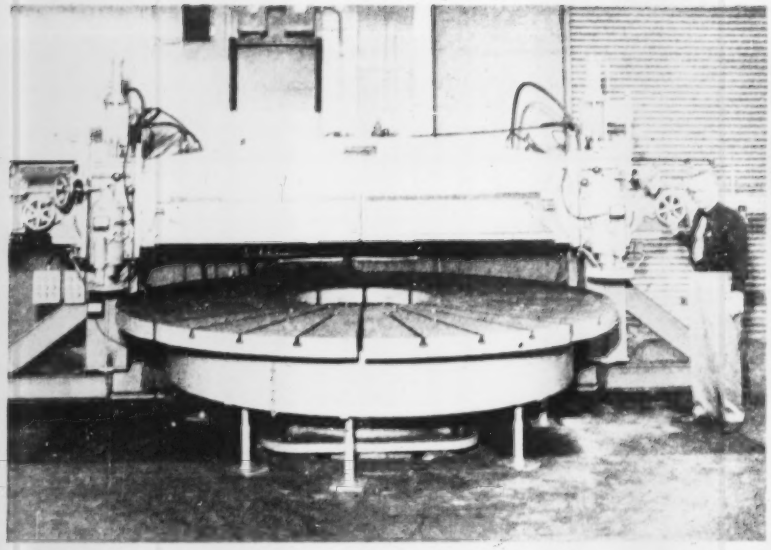
If you're after something *more* than deliveries, alone, consider this: Here, awaiting your call, are printed technical booklets, data sheets and other service literature designed to solve a variety of tooling and production headaches . . . field engineering service to help you get the most from every pound of steel you use . . . as well as in-plant job assistance when the going gets rough. And when necessary, this service brings you the experienced counsel of metallurgists direct from the Reading Mill.

Why settle for less than team action and big league service when ONE STEP delivers it so fast and easy? Just reach for your phone and get in touch with your Carpenter Mill-Branch Warehouse or Distributor. The Carpenter Steel Co., 139 West Bern St., Reading, Pa.

Carpenter

Mill-Branch Warehouse Service

SPECIALTY TOOL • ALLOY and STAINLESS STEELS



Grinder has 144-inch table and a total width of 28 feet. Grinding units are self-contained—operate independently

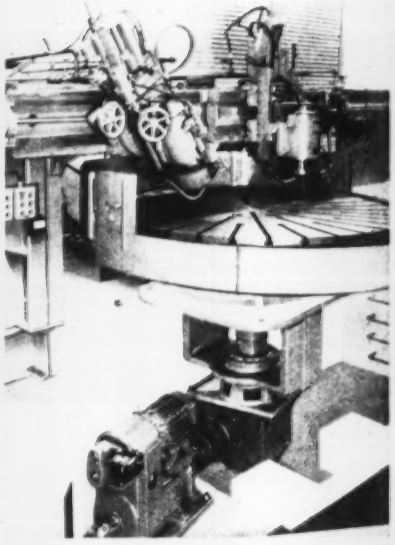


Table drive in pit is a self-contained infinitely variable speed unit. Standard table has maximum of 13.51 rpm

Large Diameters Precision Ground

Machine is the largest of its family. It will work to 0.0002-inch or better tolerances. Two grinding units work independently over the 144-inch table

LARGE GRINDER soon to be installed in the Naval Ordnance Plant, Louisville, has the job of maintaining gage-maker tolerances over dimensions as large as 140 inches.

Built specifically for precision internal, external and surface grinding on large diameters, the machine will eliminate slow, tedious hand scraping or stoning of the big parts. It will also virtually obviate the individual fitting of the parts into assemblies.

Louisville machine has a 144-inch table. It's largest of the line of grinders made by the Frauenthal Division, Kaydon Engineering Corp., Muskegon, Mich.

Two Pair—Designed for the wide range of jobs it will have to handle in the ordnance plant, the machine will be one of four when the projected installation is complete. Two of these large 144-inch-table machines will be augmented by two others with 72-inch tables. They all will be used to grind gun mount bearings as well as many other heavy and large parts.

Table drive of the machines is a self-contained infinitely variable-speed unit equipped with a remote control dial speed indicator and pushbutton control. Change in speed is accomplished by holding the increase or decrease buttons down until the indicator registers desired table speed.

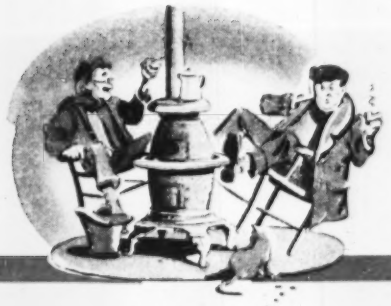
Isolation — Curtailing vibration and chatter, the superstructure is not an integral part of the main spindle housing. It consists of two upright columns anchored independently from the table assembly of the machine.

Grinding units are direct connected self-contained and are mounted on the vertical slides. They can be tilted independently to provide many setup combinations.

Family Tree — Standard table speed range is from 2.25 to 13.51 rpm. Grinding wheel spindle drive is 1730 rpm, 7½-hp. Maximum wheel diameter is 14 inches. Maximum length strokes are 8 inches vertical and 36 inches horizontal.

First progenitor of these machines is one Kaydon built for themselves in 1942. At that time they held important orders for bearings to be used by the military. Super accuracy was required and the push was on for greater production.

When they were unable to buy a machine to do the work, they decided to go ahead and build one of their own. Customers saw the machine at work, asked for similar machines for their own shops, and Kaydon found itself in the machine tool business.



THE BURLINGTON LIARS' CLUB
SPINS ANOTHER YARN

"BATTER UP!"

Old-time lumberjacks in Northern Wisconsin had their own way of getting a mess of fresh trout. A hungry, pint-sized Paul Bunyan, taking a plug of his favorite "chawin' t'baccy," would shave off a handful, rub it up real fine, and then scatter it out over the surface of the stream. The trout, thinking a hatch of flies had come out, would rise and strike those particles of tobacco.

While the trout were enjoying their unexpected feast, the lumberjack would go back into the woods and cut himself a hickory club about the size of a baseball bat. Then he'd walk back and take his stand at the edge of the stream. And when those trout came up to spit, he'd clout them onto the bank!

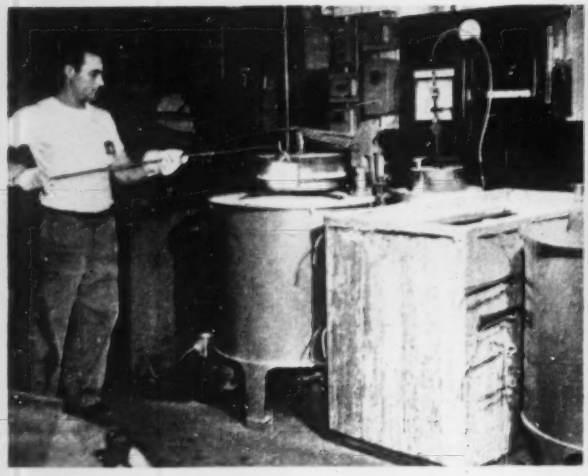
Wisconsin lumberjacks didn't bother "fishing around" when they wanted a mess of trout. And you don't have to "fish around" when you want refractory dolomite—not if you remember the name BAKER'S MAGDOLITE . . . the original dead-burned dolomite.

The superior chemical, physical, and mineralogical composition of BAKER'S MAGDOLITE assures properly-burned grain-sized particles, helping you get more uniform ingots, in greater numbers, at lower fuel costs, with less defective production material.

The next time you need refractory dolomite, don't "fish around." Order BAKER'S MAGDOLITE! It's always 5 ways better: Composition, Preparation, Strength, Economy, Quality.

JEBCO
PRODUCTS
SINCE 1889

THE J. E. BAKER COMPANY
YORK, PENNSYLVANIA
Plants: York, Hillsboro, Pennsylvania — Millsdale, Ohio



For specification hardening for carburizing and gas cyaniding small loads The Vapocarb-Hump equipment is widely used.

For scale-free steam atmosphere heat treating for economical air atmosphere tempering progressive heat-treats use the Steam Homo.

USE THIS FURNACE "TEAM" FOR

More Heat-Treating Versatility... in less floor space!

● More and more heat treaters are discovering the versatile Vapocarb-Hump and Steam Homo furnace team . . . are finding just how useful this combination can be. For these two furnaces can handle well over 90% of the heat-treat requirements of most toolrooms and small heat-treat departments. In addition, this team offers a variety of furnace atmospheres . . . permits greater flexibility in choosing the right heat treatment for a particular job . . . saves floor space by eliminating the need for infrequently used special purpose furnace equipment.

THE VAPOCARB-HUMP FURNACE The Vapocarb-Hump method of hardening with Triple Control control over atmosphere, rate of heating and quench point gives the heat treater the precise controllability necessary for high-quality specification hardening.

In addition, the Vapocarb-Hump Furnace can be used to carburize and gas cyanide small loads. For these uses the equipment provides atmosphere control, automatic temperature control and a record of time and temperature . . . all the factors necessary to assure desired case depth.

THE STEAM HOMO FURNACE The Steam Homo Furnace can be used as an air atmosphere tempering furnace with all the advantages of the Homo Method or with a steam atmosphere, making it applicable to a great variety of other operations. Applications utilizing this steam atmosphere include steam-treating high speed steel cutting tools and bluing of iron and steel parts.

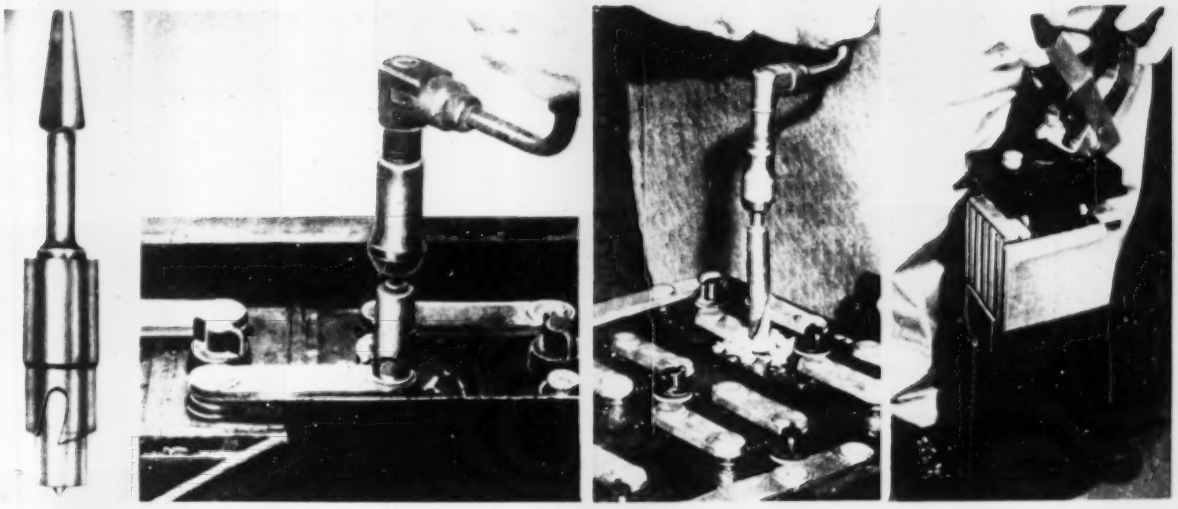
Non-ferrous applications include solution heat-treating of aluminum, precipitation hardening of beryllium copper and the annealing or stress relief of brass . . . all accomplished in the Steam Homo without scale, eliminating many expensive cleaning, buffing and pickling operations.

For complete information regarding this furnace team, write 4957 Stenton Ave., Phila., 44, Pa., or contact our nearest office.

LEEDS NORTHRUP

instruments automatic controls • furnaces

Jrl. Ad T-620-39



Special tool at left drills an annular hole so connectors and covers can be removed without disturbing post

An alternate method of drilling posts to permit removal of damaged cover involves use of a 15/16-inch drill

Pulling battery cover and element simultaneously is a technique Gould suggests when cover is not damaged

TONE UP BATTERY REPAIR

Right Tools, Proper Procedure Keep Truck Parts Alive

Battery maker cites several techniques to follow when replacing cells or elements. Maintenance aptitude can mean worthwhile savings in extended life

EXTENDING the life of an accidentally damaged industrial truck storage battery often requires removal of the cover for cell replacement or element repair. Done correctly, this relatively simple job can mean worthwhile savings for battery and truck maintenance departments. Trouble often arises, according to Gould-National Batteries Inc., Trenton, N. J., because proper procedure is not understood in many repair shops.

Covers of rubber-jar batteries have post openings lined with lead inserts integral with the hard rubber cover. These inserts or linings are welded to the lead battery posts to prevent leaks. To remove a damaged cover, it is necessary to drill out gaps between posts and inserts.

Techniques — To execute one method properly, the company devised a special drill for use among its repair equipment. The tool cuts an annular hole and permits lead posts to remain solid, upright and at normal height after the cell connector and jar cover have been separated.

Another technique suggested by the company calls for drilling posts in the damaged cover to a $\frac{3}{8}$-inch depth with a 15/16-inch drill. This frees the intercell connector. Drilling action can then be continued through the cover to free it in turn.

Rebuilding Required — This latter method requires rebuilding the posts before reassembling in a new cover to replace the broken member. Rebuilding is effected by a simple lead puddling, applying heat by a carbon electrode manipulated within the cavity of a simple post mold. Post molds are available as purchased items if the maintenance department doesn't make its own.

Certain battery designs provide greater clearance between the intercell connector and cover top. If clearance is sufficient, the company suggests the first drilling can be eliminated by a horizontal saw cut under the connector.

Basic Cell Repair — In cases where the cover is not damaged, but both cover and elements are to be withdrawn from the jar for basic cell repair, it is necessary only to remove the intercell connector and lift cover and element as a unit. Chains are attached to hold-down clips and can be stepped on by repairmen as cover and element are lifted. Lifting tool in this case is a post cutter with cutting edges dulled.

During this type repair operation, Gould says it is not even necessary to remove the intercell connector from the post, providing a saw cut through that connector is permissible. The cut, says the company, should follow immediately above the junction line between the bad cell and its neighbor.

Only CARBORUNDUM gives YOU

CARBO

TRADE

"Carborundum" is a registered trademark which indicates manufacture by The Carborundum Company, Niagara Falls, New York

so wide a choice of abrasive tools

You get UNBIASED COUNSEL based on all abrasive methods

Your business, in mass production of parts or finished assemblies, is the problem of generating close tolerance sizes, of producing high surface finishes, of removing stock. The business of CARBORUNDUM is the exclusive ability to recommend and furnish you the specific type of abrasive product which will give you highest quality at lowest cost, on every operation you perform.

Take off-hand grinding, for instance. You can count at least 7 different abrasive methods of off-hand grinding. How can you be *sure* the method you are using is the best —the lowest in cost? By asking CARBORUNDUM . . . for CARBORUNDUM alone has a complete, branded line of grinding wheels *and* abrasive belts *and* tumbling and polishing grains. Only CARBORUNDUM can recommend without bias, on the sole basis of what's best for you.

Or suppose you manufacture fountain pens. You can finish and polish the barrels with abrasive belts or grinding wheels . . . you slit the points with a tiny grinding wheel . . . finish the clips with tumbling abrasives. CARBORUNDUM alone gives you *one-source control* of abrasive quality, on every type of abrasive you use . . . quality that's constant, identical, dependable—thus economical.

Several ways to do one operation? Call in CARBORUNDUM. Several processes on one part? Call in CARBORUNDUM. Either way, you win.

Call your CARBORUNDUM *Salesman or Distributor* today!

He's your best bet for complete stocks, prompt delivery . . . and best of all, experienced counsel on *every* new development in the *entire* field of abrasives. He's in the yellow pages under "Abrasives" or "Grinding Wheels." Phone him today—it's to your profit!

Ready now—your free copy of the new big COATED ABRASIVE SELECTOR catalog . . . containing detailed recommendations for both machine and hand sanding operations on tough and soft metals, glass, plastic, wood. Phone for it today.

RUNDUM

MARK

. . . the ONLY source for EVERY abrasive product you need

NEVER BEFORE

anything like this on stripper cranes

- Special electrical counterweight (counter torque device developed by The Alliance Machine Company, prevents ingots from falling, inflicting damage to buggies and also automatically prevents slack cable during stripping operation.)
- Eliminates heavy, hazardous counterweights.
- Due to a unique lubricating device, the ample size bronze nut gives many years of trouble-free service.
- All gears are enclosed and run in oil.
- Cab provides operator with maximum visibility and safety.

There are many reasons why it pays to consult Alliance when you are planning to install material-handling equipment. Over half a century of experience building cranes and mill machinery is always at your disposal.

World's Largest Builders of World's Largest Cranes

LADLE CRANES · **GANTRY CRANES** · FORGING MANIPULATORS · SOAKING PIT CRANES · **STRIPPER CRANES** · SLAB AND BILLET CHARGING MACHINES · OPEN HEARTH CHARGING **MACHINES** · **SPECIAL** MILL MACHINERY · STRUCTURAL FABRICATION · COKE PUSHERS

THE ALLIANCE MACHINE COMPANY

Main Office, ALLIANCE, OHIO · Pittsburgh Office, 1622 OLIVER BLDG., PITTSBURGH, PA.

Alliance

NEW PRODUCTS and equipment

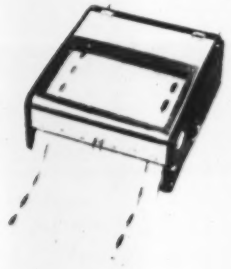
Reply cards on page 125 will bring you more information on any new products and equipment in this issue

Portable Oscillograph

. . . records six channels

This portable oscillograph, model BL-226, is equipped with six Penmotors for recording simultaneously six channels of instantaneous electric phenomena. It is also applicable for recording mechanical phenomena that can be converted to electrical in the frequency range of direct current to 100 cycles per second.

A large window at the instrument top permits viewing the chart



as information is recorded. Controls provide starting, stopping and chart speed selection of 5, 25 and 125 millimeter per second. As an accessory, a remote control box permits the operator to start and stop chart drive from remote locations. Equipment Division, Brush Electronics Co., Dept. ST, 3405 Perkins Ave., Cleveland 14, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 1

Redesigned Hydraulic Bender

. . . minimized distortion, strain

Even distribution of stress and strain developed during bending, and minimized mechanical distortion are gained by redesign of this hydraulically-operated bending machine. Change in bending table from fabricated steel to strongly-ribbed alloy casting provides greater strength during bending. It also allows integration of gear

housing into the casting, assuring positive alignment at all times.

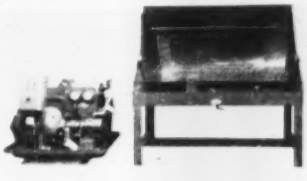
Other improvements include addition of foot controls to free the operator's hands for handling and positioning. The previous 2 hp motor is replaced by a larger 3 hp unit. O'Neil-Irwin Mfg. Co., Dept. ST, 619 — 8th Ave., Lake City, Minn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 2

Recoil Cylinder Test Stand

. . . pressures: 3000 - 5000 psi

This test stand is designed to check recoil cylinders for hydraulic pressures from 3000 to 5000 psi.



Stand is equipped with a telescopic lid and plexiglass window. Equipment includes Parker fittings and tubing, hose assemblies, Marsh gages with a 30 gallon tank. J. N. Fauver Co. Inc., Dept. ST, 49 W. Hancock, Detroit 1, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 3

Drill Press Clamp

. . . secures odd-shaped pieces

Designed to fit all popular drill press makes and models, the Sta-Put clamp holds virtually any shaped object square and secure for accurate drilling. It clamps on the drill press column and is quickly and easily adjusted. Manufac-

turer reports its fixture eliminates need for C-clamps, vises or V-blocks.

As a safety feature, the clamp is said to eliminate danger of damage to hands. Pressure fork is adjustable from 7¼ to 8¼ inches. Clark & Sawyer Inc., Dept. ST, 2012 E. 7th St., Los Angeles 21, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 4

In-Plant Box Maker

. . . no need to stockpile

Savings on inventory, storage space and box costs are reported gained by this Rite-Size box-making machine, resulting in complete packaging service to individual plants. The machine is fully automatic, requires one operator to turn

COLD ROLLED STRIP
made-to-measure for your products
BY FOLLANSBEE

Follansbee Cold Rolled Strip is custom-made strip steel that fulfills most manufacturing needs. Regardless of the stamping or forming operations involved, the quality of Follansbee Cold Rolled Strip offers these real advantages:

- **Close tolerances**
- **Mill finishes for quality products**
- **Supplied in coils for fast action in presses**

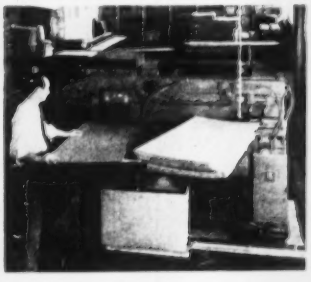
You get real productioneering efficiency and time-saving economy when you feed your presses directly from coils of Follansbee Cold Rolled Strip.

Follansbee Steel Corporation is set up to provide you with quick, direct, personalized service. Consult your trained Follansbee Steel representative. He will be glad to discuss your fabricating problems with you.

FOLLANSBEE STEEL CORPORATION
GENERAL OFFICES, PITTSBURGH 30, PA.
COLD ROLLED STRIP — STAINLESS TERNE ROLL ROOFING
POLISHED BLUE SHEETS AND COILS
Sales Offices—Chicago, Cleveland, Detroit, Indianapolis, Kansas City, Los Angeles, Milwaukee, Nashville, New York, Philadelphia, Rochester, San Francisco, Seattle, Toronto and Montreal, Canada.
Mills—Follansbee, W.Va.
FOLLANSBEE METAL WAREHOUSES
Pittsburgh, Pa. — Rochester, N.Y. — Fairfield, Conn.

out a maximum 600 box blanks per hour. An idea of simplicity of its dimensional controls is seen from the fact that setup time for any box size is less than 1½ minutes. Pushbutton and scale control regulates length, width and depth, maintaining accuracy to 1/16-inch on any panel.

One effect of the unit is elimination of need for stockpiling special-



size and shape cartons. Unit performs its box-making function in an area about 90 per cent smaller than that required for storage in many operations. Packaging Machinery Division, Colt's Mfg. Co., Dept. ST, Hartford 15, Conn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 5

Contour Wheel Dresser

. . . fits any horizontal grinder

Model KB11-3 contour dresser fits any horizontal surface grinder and dresses wheels to 3 inches wide, 20 inches diameter. The dresser is operated manually, requiring a minimum of operator skill. Diamond movement across the wheel is reduced from the enlarged template by means of an inclined plane and slide arrangement.

The dresser works to an accuracy of 0.0001-inch. It has magnetic-chuck mounting for short runs, permanent mounting at end of chuck for long runs. Its 50-pound weight permits movement from one machine to another.

USE A REPLY CARD
Just circle the corresponding number of any item in this section for more information.

Yours FOR THE ASKING

TEAR OUT CARD, FILL IN and MAIL TODAY!

68. Speed Reducers

D. O. James Gear Mfg. Co.—120 sizes of continuous-tooth herringbone gear speed reducers are listed in catalog 40-C. It features informative data on reduction gears ranging from ½ to 5000 hp and ratios from 2:1 to 368:1.

69. Pulverizers

Majac Engineering Co.—Jet pulverizers for fine grinding, fuel pulverizing, defiberization, drying and mixing are described in illustrated 8-page folder. Large cut-away drawing shows design features and operation. Processable materials are listed.

70. Industrial Cut Gears

Industrial Gear Mfg. Co.—16-page bulletin 152A takes reader on a pictorial tour of this company's plant and shows the myriad of machines used to generate spur, bevel, miter, spiral, herringbone, helical, internal and worm type industrial gears.

71. Double Angle Shears

Kling Bros. Engineering Works—Details of a machine which combines two shears in single unit are contained in 4-page illustrated bulletin 2345. Double angle shear is designed for production cutting of flats, bars and angles on either long or short runs.

72. Temperature Controllers

Thermo Electric Co.—Electronic signaling temperature controllers of the resistance bulb type for use with ovens, tanks, molding and extruding machines, stills, kettles, constant temperature baths and similar equipment are subject of three illustrated bulletins which comprise catalog section 55.

73. Clamps & Fixtures

Lodding Inc.—56 pages of dimensional drawings as well as specifications are presented in catalog on "Clamp Assemblies and Fixture Details." All components necessary to standardizing tool engineering practice are grouped for users' convenience. Items cataloged include washers, nuts, bolts, hand cams and wheels, screws, studs, knobs and lever clamps.

74. Engine Lathes

Cincinnati Lathe & Tool Co.—Installation, operation, and lubrication of model LT Cintilathes are covered in 46-page publication S-104. Exploded view and parts listings for these models as well as older design lathes are included. Covered are 16, 18, 20 and 24-in. sizes.

75. Industrial Construction

Commercial Contracting Corp.—24-page brochure describes company's operations in constructing, installing and equipping industrial, institutional or commercial projects. It shows building operation from start to finish and lists 22 completed projects. Teamwork is keynote expressed throughout.

76. Set Screws

Set Screw & Mfg. Co.—Setko and ZipGrip set screws are described, illustrated with dimensional and price data in 20-page catalog No. 16. Variety of types and shapes are covered.

77. Pitch Line Arbor

Splinemaster Products Co.—The Splinemaster pitch line concentricity arbor for internal or external gear application to production or inspection is described and illustrated in 4-page bulletin PM-100. Various types and their applications are shown.

78. Automatic Millers

U. S. Tool Co.—"U. S. Multi-Millers" is title of 8-page illustrated bulletin 25 that details operation and applications of these machines. Cam controlled, Multi-Millers are designed for milling small parts which require extreme accuracy and intricate cuts.

STEEL
Penton Building, Cleveland 13, Ohio

4-20-53

Please send literature or detailed information on subjects circled at left to—

NAME _____ TITLE _____

COMPANY _____

PRODUCTS MANUFACTURED _____

ADDRESS _____

CITY AND STATE _____

This card MUST be completely filled out. Please TYPE or PRINT

1	11	21	31	41	51	61	71	81
2	12	22	32	42	52	62	72	82
3	13	23	33	43	53	63	73	83
4	14	24	34	44	54	64	74	84
5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
10	20	30	40	50	60	70	80	90

FIRST CLASS
Permit No. 36
(Sec. 349 P.L.&R.)
CLEVELAND, OHIO

BUSINESS REPLY CARD
No Postage Stamp Necessary If Mailed in the United States

— POSTAGE WILL BE PAID BY —

STEEL
Penton Building
Cleveland 13, Ohio

Rogers Service Dept.

79. Hard-Facing

Stoody Co. — Completely revised, the "Stoody Hard-Facing Guidebook" deals with the rebuilding and hard-facing of all types of heavy equipment subjected to wear and corrosion. Various recommended methods of application as well as proper materials to be used are covered from the standpoint of maintenance and production.

80. Small Metal Parts

Torrington Co., Specialties Div.—Small precision metal parts listed in 4-page folder are pins and pivots; screwdriver blades; rotary swaged rods, wires and tubing; grinding wheel mandrels; abrasive points and polishing wheels; perforating punches; and tapered or pointed wires and rods.

81. Unit Heaters

United States Radiator Corp. — Features of U. S. unit heaters covered in 16-page illustrated bulletin A365 include lightweight attractive cabinet design, free-floating assembly to compensate for expansion, resiliently mounted motor for quiet vibrationless operation and aluminum fin heating coils. Units are applicable to wide range of steam heating systems.

82. Precision Castings

Sessions Foundry Co.—Tolerances of plus or minus 0.005-in. per dimensional inch, smooth as-cast surfaces, deep wear surface and other design and engineering features of Hyprecision castings are described in 8-page illustrated booklet.

83. Tin Plate

Wheeling Steel Corp.—"It's Wheeling Steel" is title of 16-page illustrated brochure on hot-dipped and electrolytic tin plate. Photos and text cover steps in processing and describe equipment used in making Ductillite tin plate.

84. Masonry Saw

Clipper Mfg. Co.—Difficult, intricate shapes can be cut from standard refractory stocks for application to furnaces, kilns and boilers by the dustless Clipper masonry saw. Described in illustrated circular, it makes smooth cuts with minimum of waste.

85. Dermatitis Control

West Disinfecting Co.—32-page illustrated booklet "The Control of Dermatitis in Industry" presents prevention and control program for guaranteeing personal cleanliness, protecting exposed skin areas, preventing clothing contamination and guarding against special hazards. Six-page chart shows types of dermatitis prevalent in various industries with preventive measures for each.

86. Large Compressors

Worthington Corp.—32-page illustrated bulletin L-676-B1 entitled "Feather Valve Compressors" described machines in ratings from 75 to 350 hp with angle design that requires minimum of space. Features are revealed in sectional photographs, and full information is given to aid in selecting the right compressor for given conditions.

EDITORIAL REPRINTS:

87. Fighting Corrosion

Cost of corrosion to industry is appallingly high, however much can be accomplished with the latest scientific know-how. Dr. A. G. Gray, Technical Editor, summarizes some of this know-how in STEEL reprint entitled "How You Can Fight Corrosion."

88. The Blast Furnace

Here's another installment on C. E. Agnew's STEEL article "Don't Write Off the Blast Furnace." In this reprint of Part IV, author discusses how successful application of oxygen-enriched air in blast furnace practice is effected by recognizing variations in raw material thermal requirements and adjustment in operating practice.

89. Welding Stainless Steel

W. G. Blackwell of G-E's welding department presents some practical considerations in the welding of stainless steel in STEEL reprint "Welding Stainless Steels Has Its Problems." Author emphasizes proper regard to the metallurgical and mechanical peculiarities of these alloys.

90. Hydraulic Roll Lathe

A 60-in. hydraulic roll lathe, the first and largest thus far produced commercially, and installed at the new Fairless Works of United States Steel Co., is described in brief STEEL reprint "Hydraulic Roll Lathe Saves Time in Rough Machining."

FIRST CLASS
Permit No. 36
(Sec. 34.9 P.L.&R.)
CLEVELAND, OHIO

BUSINESS REPLY CARD

No Postage Stamp Necessary if Mailed in the United States

— POSTAGE WILL BE PAID BY —

STEEL
Penton Building
Cleveland 13, Ohio

Readers Service Dept.

1	11	21	31	41	51	61	71	81
2	12	22	32	42	52	62	72	82
3	13	23	33	43	53	63	73	83
4	14	24	34	44	54	64	74	84
5	15	25	35	45	55	65	75	85
6	16	26	36	46	56	66	76	86
7	17	27	37	47	57	67	77	87
8	18	28	38	48	58	68	78	88
9	19	29	39	49	59	69	79	89
10	20	30	40	50	60	70	80	90

STEEL
Penton Building, Cleveland 13, Ohio

4-20-53

Please send literature or detailed information on subjects circled at left to—

NAME _____ TITLE _____

COMPANY _____

PRODUCTS MANUFACTURED _____

ADDRESS _____

CITY AND STATE _____

This card MUST be completely filled out. Please TYPE or PRINT

where different forms on each grinder can be dressed by simple template change. Hoglund Engineering & Mfg. Co. Inc., Dept. ST, 343 Snyder Ave., Berkeley Heights, N. J.

FOR MORE DATA—CIRCLE REPLY CARD NO. 6

Stabilized Crane

. . . hoist swing eliminated

Usual swinging of a load as it is hoisted or transported from one area to another is eliminated by this stabilized crane. A big help in tank dip operations, advantages are also indicated in various assembly jobs, because parts or assemblies can be held solidly in position.

The crane has a simple arrangement of hoisting ropes that form a triangular suspension. This permits a load to be held rigidly in place, eliminating longitudinal, lateral and rotational sway. Cleveland Tramrail Division, Cleveland Crane & Engineering Co., Dept. ST, Wickliffe, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 7

Centering Size Disks

. . . for small bore gages

A complete set of centering size disks that permit the small bore gage to measure any bore within its overall range of $\frac{1}{4}$ to $\frac{3}{8}$-inch is available. Set consists of 27 disks, mounted on a rectangular plate with the size of each one plainly marked. Disks are inter-

USE A REPLY CARD

Just circle the corresponding number of any item in this section for more information.

You can afford

Sperry *Ultrasonic*

REFLECTOSCOPE INSPECTION

Dependable, non-destructive testing is often vitally important even though the need may occur at infrequent intervals or involve relatively few pieces. SPERRY INSPECTION SERVICE makes Ultrasonic Testing **economically** available under these conditions. You can hire a Sperry REFLECTOSCOPE and the services of an experienced inspection engineer whenever you need them . . . for any length of time from four hours up.

You'll find this service ideal for periodic machinery inspections, testing shipments of raw materials, testing new or pilot-model products, periodic quality checks and countless other applications to elminate on-the-job failure or to prove and improve product quality.

Almost any material can be tested; hidden defects are quickly and dependably located in up to 30 feet and over of solid steel. Write now for complete information.

KEEP UP-TO-DATE
on the latest testing data
Use the coupon below to send for your copies of the newest Industrial Application Reports.

Ultrasonic Sperry Inspection

SPERRY PRODUCTS, INC.
604 SHELTER ROCK ROAD
DANBURY, CONNECTICUT

☐ Please put me on your mailing list for Industrial Application Reports.
☐ Have a SPERRY Representative drop in when in the area.

MATERIAL TO BE TESTED _____
NAME _____
TITLE _____
COMPANY _____
CO. ADDRESS _____
CITY _____ ZONE _____ STATE _____

changeable on the head and lock positively into position by a clamping nut. Standard Gage Co., Dept. ST, Poughkeepsie, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 8

Extended Space Heater Line

. . . suspended gas-fired units

Line of space heaters is expanded by addition of suspended gas fired units suitable for natural, manufactured, mixed, liquid petro-

leum, sewage or coke-oven gas. Meters are available with input capacities from 85,000 to 215,000 Btu per hour.

Model D has a standard fan; model DB, a squirrel-cage blower for short duct runs. Model DD, without blower, is designed as a heating unit to be built directly into air-conditioning duct systems. Dravo Corp., Dept. ST, 1203 Dravo Bldg., Pittsburgh 22, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 9

Skid-Type Handling Unit

. . . stacks, moves long items

Pipe, structural steel and other long items can be stacked and transported easily with this skid-

type handling unit. The model GC-50 is designed for stacking, not only on other similar units, but on three other materials handling pieces used in the manufacturer's co-ordinated load stacking system.

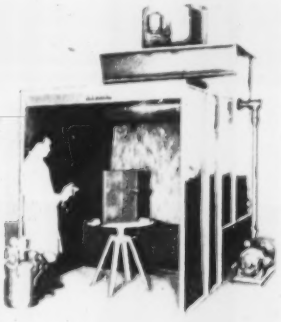
Extra rigidity of stakes is gained by a steel crosspiece joining the stakes on each side. Capacity is 4000 pounds; tiering capacity, 16,000 pounds. Phillips Mine & Mill Supply Co., Dept. ST, 2300 Jane St., Pittsburgh 3, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 10

Water Wash Paint Booth

. . . eases cleaning, ups safety

Water wash spray painting booth is designed to ease cleaning but meets all health and safety requirements. To merit high health and safety rating, the booth uses a combination water washing and cen-



trifugal force. Resulting actions of scrubbing and impingement free exhaust air of pigment sufficiently to exceed all requirements.

The Dynaprecipitor booth employs self-scouring baffle plates located at the rear water curtain base. Plates trap any pigment that may escape prior washing or air whirling and remove free moisture in the exhaust air. High cleaning efficiency is obtained in less space than previous models. Binks Mfg. Co., Dept. ST, 3122 Carroll Ave., Chicago 12, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 11

Link-Supported Furnace Wall

. . . no refractories in tension

Link-supported wall is designed so the weight of each refractory unit is transferred to the metal links. This eliminates refractories in tension, permitting use of lightweight and silica refractories, acid brick tiles or high alumina refractories as required for the particular installation.

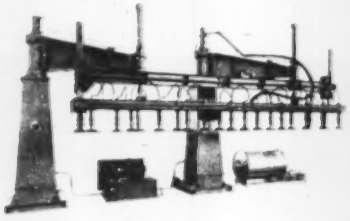
Applications are seen in the forging industry, where an adjustable door that can be raised or lowered to suit size of bars being heated is advisable. Further applications are seen among heat treaters, where it is desirable to divide furnaces into zones. The curtain wall is used here regardless of whether the furnace is circular or donut type, car-type annealing, slab heating, etc. Geo. P. Reintjes Co., Dept. ST, 2517-19 Jefferson St., Kansas City 6, Mo.

FOR MORE DATA—CIRCLE REPLY CARD NO. 12

Vacuum Unpiler, Stacker

. . . moves three slabs a minute

This vacuum unpiling and stacking machine picks up and moves 24-foot slabs or plates from one table to the receiving table. The unit handles three slabs per minute. Stacker has a pickup beam 22 feet long, on which a series of suction



cups are mounted in staggered arrangement to handle all slab, plate or sheet widths up to 42 inches. Cups are spring-loaded to insure positive grab.

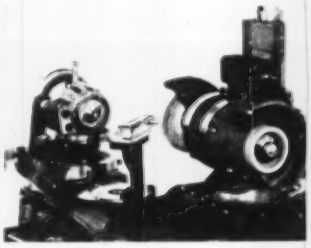
Pickup beam is actuated vertically by hydraulic cylinders. W. S. Rockwell Co., Dept ST, 200 Eliot St., Fairfield, Conn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 13

Grinding Wheel Angle Dresser

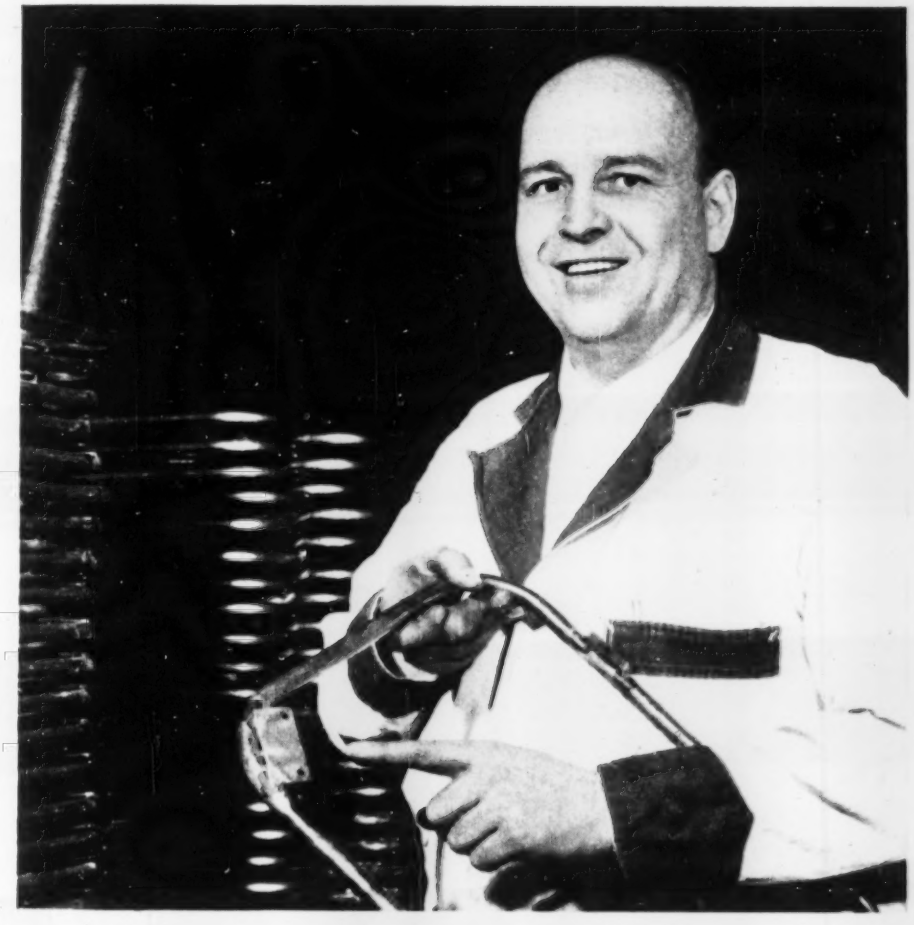
. . . used on all cutter grinders

Grinding wheel angle dresser has a graduated base and 5-minute vernier to permit precision setup and dressing. Its diamond tool is



mounted in a hardened steel block and dressing is accomplished by sliding the block across the hard-

ANACONDA WELDING RODS



PROUD MANUFACTURER. Elmer Rulf points to weld made with ANACONDA-997 (Low Fuming) Rod on side piece of generator frame made of steel tubing. None of the 2,880,000 welds made on these frames has ever pulled apart.

2,880,000 welds

. . . without one customer complaint

"IN four years, we've turned out 96,000 generator frames," says Elmer Rulf, President, Eldon Mfg. & Engr. Co., Inc., Milwaukee, Wisconsin. "Each steel tube frame requires 30 braze connections. On this job alone, we figure we've made 2,880,000 welds — all with ANACONDA-997 (Low Fuming) Bronze Welding Rods. We haven't heard a single complaint.

ELDON'S WELDER, JACK CORBETT, uses ANACONDA-997 (Low Fuming) Rod to make 1 of 30 braze connections the frame needs. Eldon also brazes lawn-mower and chain saw handles, flexible tube for air ducts.

"ANACONDA-997 Bronze Rods give strong, sound welds every time. They have a low melting point, tin easily and flow freely. Work needs less preheating, too. We do the job faster and at lower cost—with no danger of warping or cracking. Our welds are cleaner, better looking and the welds are far easier to finish."

Badger Welding Distributors, who supply Eldon with all their ANACONDA Rods, hear many such success stories. Your distributor can tell you how ANACONDA Rods can boost your own production efficiency. ANACONDA Welding Rods for many types of repair and production jobs are available from distributors throughout the United States and Canada. For latest tips on welding, write for Booklet B-13 to: *The American Brass Company, Waterbury 20, Connecticut. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.*

braze or weld with confidence—

ANACONDA®

welding rods

ened ground surface of the dresser plate.

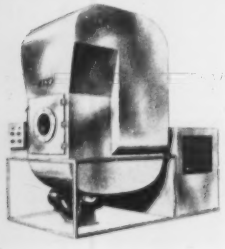
This plate can be set to any desired angle, and inverted T slide permits dressing the wheel on either side. Designed for use on a bench model radial relief grinder, the dresser can be used on almost all other cutter grinders and tool room OD grinders. Royal Oak Tool & Machine Co., Dept. ST, 29800 Stephenson Highway, Royal Oak, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 14

Sand and Dust Tester

. . . lowers power requisite

Sand and dust environmental tester is designed for streamlined air flow that makes it possible to cut power needs for moving air. Other effects are reduced floor



space and minimized air side pressure drop.

Another feature is automatic temperature and dust density control which permits tests to be set up for long term runs without constant manual regulation. Air velocity is maintained constantly throughout the run at preset speed. Humidity indication is also provided for preconditioning equipment. American Research Corp., Dept. ST, Bristol, Conn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 15

Equalizing Sling

. . . with locking device

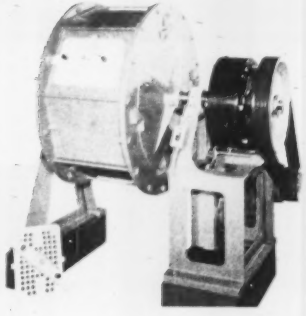
Model 52 Adjust-A-Leg equalizing sling is available in a range of nine sizes from $\frac{3}{4}$ to 28-ton capacities. It features an easily adjusted locking device that enables the wire rope legs to be frictionally locked in place. When not in use lock does not interfere with regular sling operations. Sling has a safety factor of 5 to 1 at 45 degree angle. Caldwell Co., Dept. ST, Rockford, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 16

Improved Barrel Finisher

. . . has high, vertical design

Burnishing, deburring and cutting down operations can be handled efficiently by this improved barrel finishing unit. The finisher is built around the manufacturer's high, vertical barrel design. Power



is supplied by an electric motor mounted on the pedestal.

Precision speed control is maintained by a reduction drive attached directly to the barrel shaft. Linkage between motor and reduction unit is provided by V-belts and sheaves. Unit is controlled by push-button safety switch. Other features include interchangeability of parts to add versatility and economy, and finish in color-dynamic painting. Abbott Ball Co., Dept. ST, Railroad Pl., Hartford, Conn.

FOR MORE DATA—CIRCLE REPLY CARD NO. 17

Welding Transformer

. . . current-range: 40-500 amp

This 400-amp single-phase ac welding transformer with 60-per cent duty cycle can be used with

a variety of electrode sizes for repair, maintenance and construction work. It provides current range of 40 to 500 amp. The transformer incorporates arc-stabilizing capacitors that make it easier for operators to strike and maintain an arc.

Wide current range allows use on applications from light-duty low-current sheet metal jobs to high-current industrial work. A range switch permits quick change from high to low current. General Electric Co., Dept. ST., Schenectady 5, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 18

Exhaust Head Purifier

. . . no moving parts or filters

Steam and vapor particles, such as troublesome oil and process liquors, which attack machinery, buildings and create a nuisance are cleaned up by an industrial stack exhaust head. The head has no moving parts or filters, leav-

ing nothing to wear and nothing to clog. Entrainment-laden vapor enters the purifier, is engaged by a stationary centrifugal element that imparts controlled rapid rotational motion to the vapor.

This action guides all dirt particles, oil and water outward to the purifier wall where it is drained to and ejected out the drain. Effectiveness is guaranteed at 99 per cent. V. D. Anderson Co., Dept. ST, 1935 W. 96th St., Cleveland 2, O.

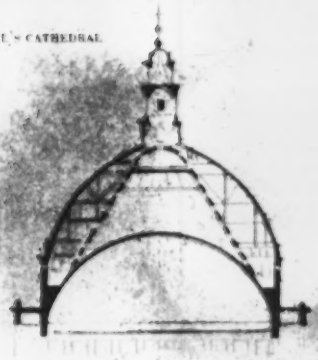
FOR MORE DATA—CIRCLE REPLY CARD NO. 19

High-Temperature Brazing Flux

. . . greater film strength

Extra penetration and protection for high temperature brazing and hard soldering of ferrous and nonferrous metals is provided by Kwik-flux No. 94. Good film strength eliminates island formation, prevents oxidation and scale, and protects and cleans metal surfaces

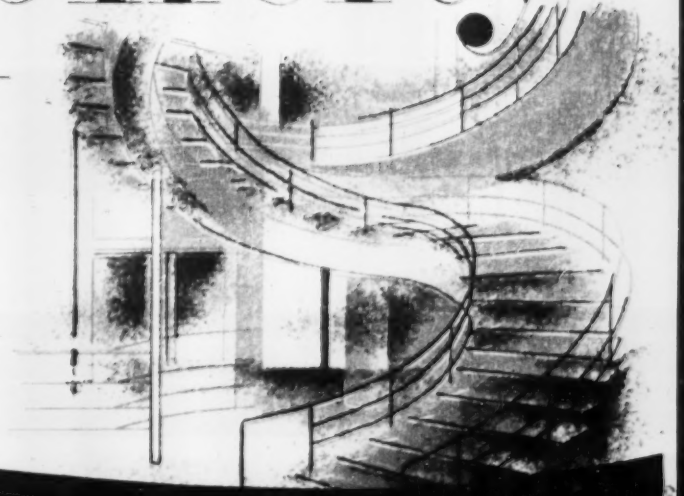
"Reader, if thou seekest his monument, look around"—INSCRIPTION ON SIR CHRISTOPHER WREN'S TOMB IN ST. PAUL'S CATHEDRAL

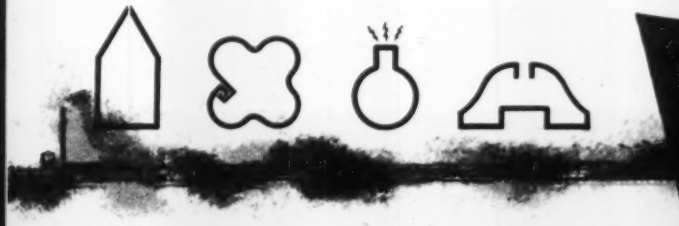


From the ashes of the Great Fire in 1666 emerged Sir Christopher Wren's masterpiece—St. Paul's Cathedral—with its soaring central dome "rising from the mists of London, like an Alpine peak". ★ In designing the dome, Wren solved with amazing simplicity one of the most difficult structural problems in architecture—how to support a great central dome without using excessively heavy and constricting crossing piers. ★ This same simplicity, combined with unusual structural engineering knowledge, enabled Wren to produce diverse effects in his many buildings without expensive elaboration.

simplicity

Whether hidden from sight doing a functional job, or exposed to view just looking pretty, Van Huffel metal shapes and tubing simplify a lot of today's building problems. ★ Architects, designers and engineers know they can incorporate in their designs strength without excessive weight . . . economy without sacrificing quality . . . and simplicity without complicated assembly. That's why they are continually thinking up new uses. That, too, is why they keep coming to Van Huffel —where ideas take shape—in metal.





Van Huffel

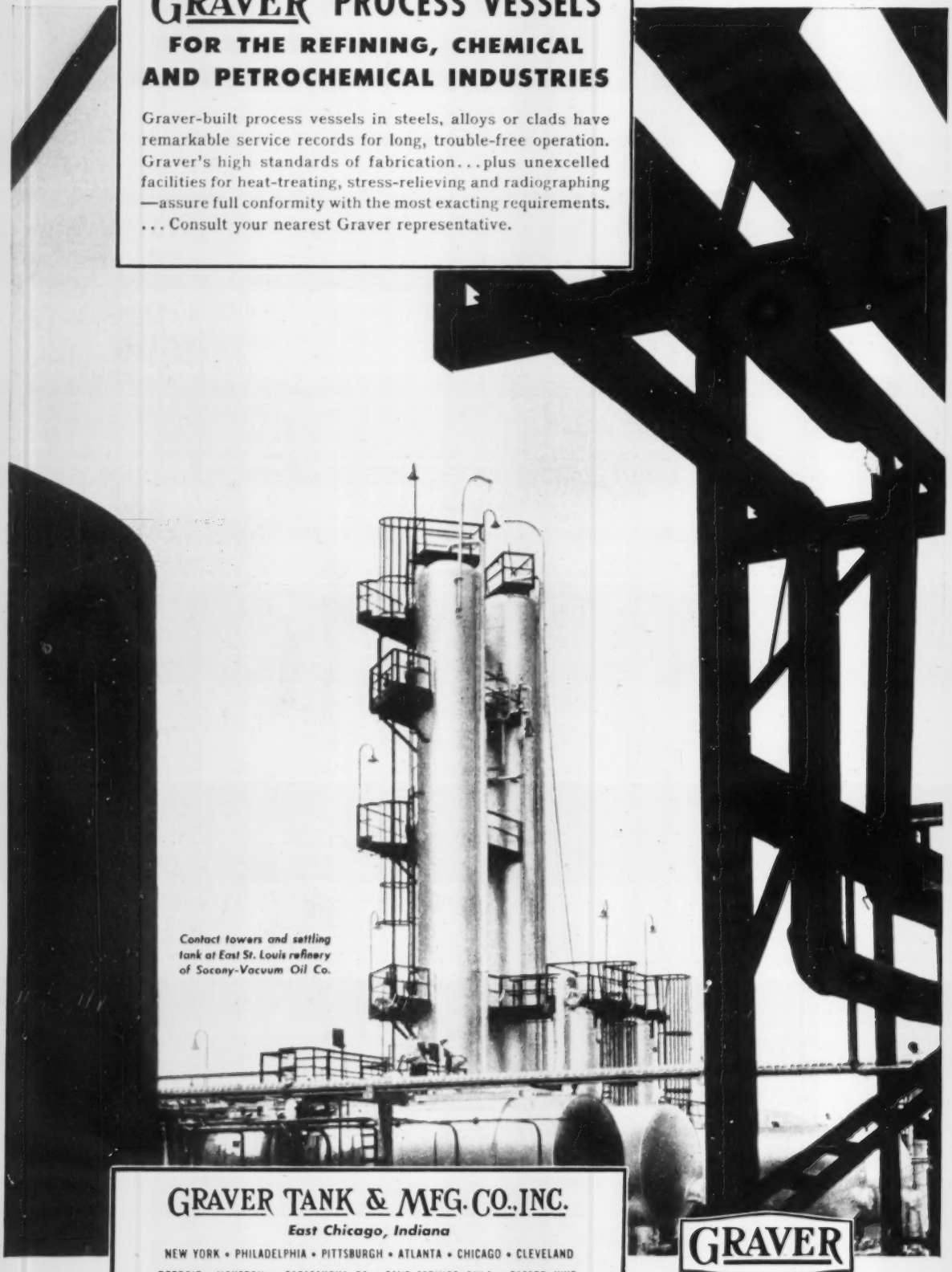
TUBE CORPORATION · WARREN, OHIO

WELDED · LOCK SEAM · OPEN SEAM · BUTTED TUBING · METAL SHAPES · MOULDINGS

GRAVER PROCESS VESSELS

FOR THE REFINING, CHEMICAL AND PETROCHEMICAL INDUSTRIES

Graver-built process vessels in steels, alloys or clads have remarkable service records for long, trouble-free operation. Graver's high standards of fabrication...plus unexcelled facilities for heat-treating, stress-relieving and radiographing —assure full conformity with the most exacting requirements. ... Consult your nearest Graver representative.



Contact towers and settling tank at East St. Louis refinery of Socony-Vacuum Oil Co.

GRAVER TANK & MFG. CO., INC.

East Chicago, Indiana

NEW YORK • PHILADELPHIA • PITTSBURGH • ATLANTA • CHICAGO • CLEVELAND
DETROIT • HOUSTON • CATASAUQUA, PA. • SAND SPRINGS, OKLA. • CASPER, WYO.

GRAVER

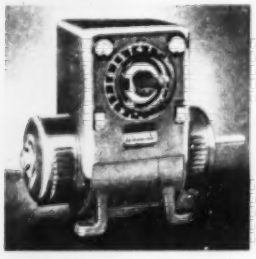
when brazing at high temperature. The product is non-spattering. Special Chemicals Corp., Dept. ST, 30 Irving Place, New York 3, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 20

Welding Generator Series

. . . forms low-cost arc units

Direct current welding generator line is made for direct coupling to gasoline engine, electric motor or belt drive from a motor or line



shaft to form a low cost arc welder. The 200-amp generator is recommended for general welding applications. It has 40 to 250-amp range and handles a maximum 3/16-inch electrode for continuous welding. It requires an engine with 20 bhp at 2200 rpm, or motor with 10-hp rating at 2200 rpm.

The 300 amp model has 40 to 400-amp range and includes an auxiliary power outlet of 1 kw capacity for use in operating small electric tools and lights. It requires an engine with 50-bhp rating at 1800 rpm, or motor with 20-hp rating at 1800 rpm. Hobart Bros. Co., Dept. ST, Troy, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 21

Storage Battery Line

. . . greater capacity, same space

Twenty per cent greater capacity is packed into the same space in this line of T-H Exide Ironclad batteries. Polyethylene nonoxidizing slotted plastic tubes keep active material in constant contact with grid spines, but permit free electrolyte penetration throughout the active material. Another feature is a polyethylene acid-proof tube-sealer fitted to the bottom of the positive plate to seal in the active material.

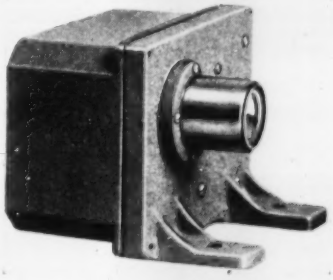
Grids contain corrosion-resistant Silvium, a contributor to longer life. Positive plates are larger, balanced by extra-heavy negative plates. Trays are sprayed with a plastic coating that is both acid-resistant and possesses high insulating qualities. Electric Storage Battery Co., Dept. ST, 42 S. 15th St., Philadelphia 2, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 22

Photoelectric Light Source

. . . uses dual-filament lamp

Positive protection against shutdowns due to failure of light source is provided through an improved dual-filament lamp in this photoelectric unit. When one filament fails, the other is activated automatically to prevent interruption of photoelectric control. Simultaneously, a signal light warns the operator the lamp should be replaced.



Another feature designed to further increase lamp and tube life is an extra-low voltage connection for use when distance between light source and photo-amplifier is less than 5 feet. Autotron Co., Dept. ST, Box 722-U, Danville, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 23

Power Impact Tools

. . . for standard power tools

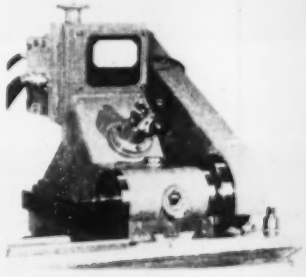
Power impact sockets, extensions, adapters and drivers for use with any standard air or electrically powered tool are available. Sockets are made in square or hexagonal openings for nut sizes ranging from 3/16 to 3½ inches with drive sizes from ¼ to 1½ inches. Extensions have ¼ to 1½-inch drive sizes in standard lengths. Adapters are obtainable to permit interchanging of sockets with other drive sizes of impact power tools. Cornwell Quality Tools Co., Dept. ST, 1053 Cleveland Ave., Mogadore, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 24

Hydraulic Thread Miller

. . . variable speed to 3000 rpm

Hydraulic group of thread milling machines is available in four sizes: 4 x 9, 10 x 24, 15 x 30 and 20 x 48 inches, with bed lengths to meet requirements. Design pro-



vides speeds infinitely variable up to 3000 rpm. Application of adjustable-speed hydraulic motors to the cutter spindle drive and work spindle drive permits balancing of cutter speed and work feed. This produces good cutting condition and permits use of carbide cutters where applicable.

Adjustments are possible instantly during the operating cycle. Feeds range from 6 seconds to 1 minute per revolution. All actions are automatic except handling of workpieces. Hanson-Whitney Division, Whitney Chain Co., Dept. ST, Hartford, Conn.

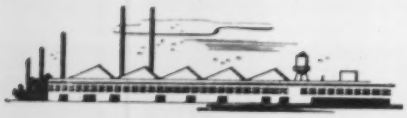
FOR MORE DATA—CIRCLE REPLY CARD NO. 25

Furnace Reversing Control

. . . two instruments in one

Fast, accurate regenerative furnace reversal is available with this combined temperature recorder and temperature-difference controller. In one instrument instead of the conventional two the controller provides continuous checker temperature recording, simultaneous temperature-difference measuring between regenerators and either automatic furnace reversal or warning for manual reversal when preset difference is reached.

Controller draws a two-point continuous record of temperature checkers at opposite ends of the

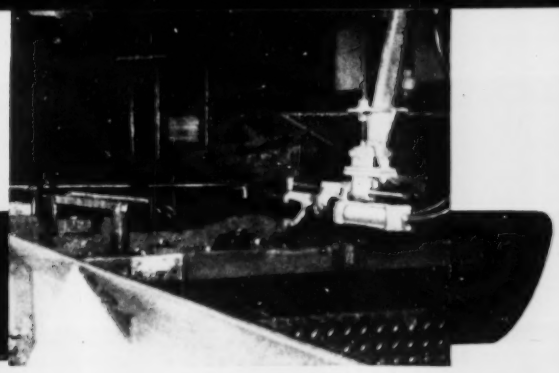


the "ANCHOR MEN" of the production team

DANLY PRESSES *help Ford*

View of front floor pan stamping line in Ford's new Buffalo Stamping Plant. Both big presses shown are Danly Underdrives. They are placed astride a continuous conveyor line which is part of Ford's remarkable "automation" system of material handling.

maintain uninterrupted output

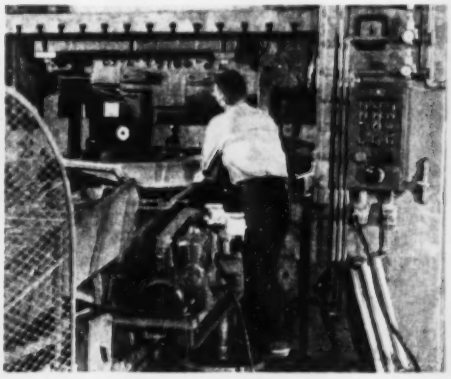


Looking into the dies of a Danly Underdrive Press on the front floor pan stamping line. Note the "iron hand" ready to remove the part after trimming operation is complete. Pneumatically powered and activated by a limit switch, the "iron hand" places the piece on a conveyor for transportation to the next press.

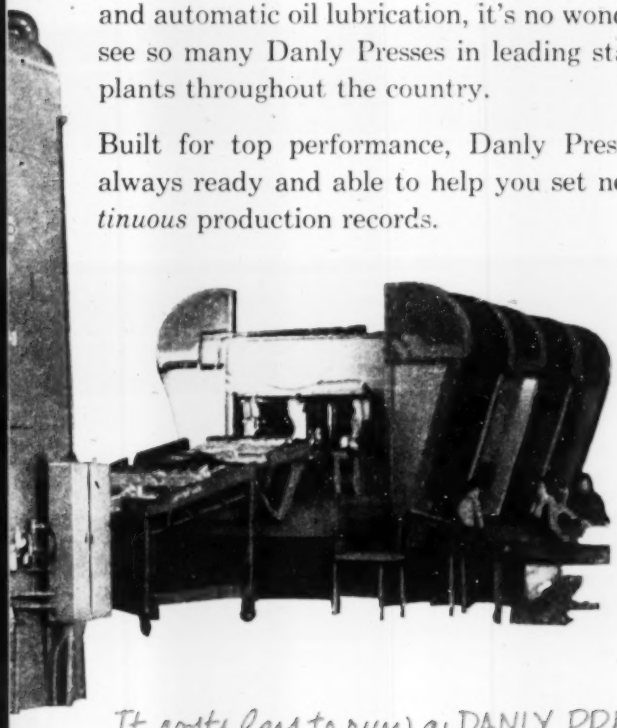
Non-stop production is the watch word in Ford's huge new Buffalo Stamping Plant. Approximately 40% of all Ford stampings come from here . . . the result of peak capacity, minimum cost operation.

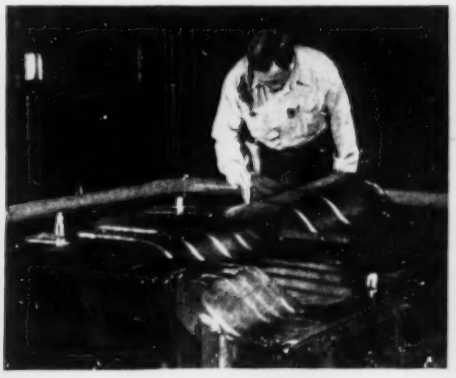
Up and down all 19 major stamping lines you'll find Danly Presses . . . each one a vital link in the chain of uninterrupted production. With exclusive features like the Cool Running Clutch and automatic oil lubrication, it's no wonder you see so many Danly Presses in leading stamping plants throughout the country.

Built for top performance, Danly Presses are always ready and able to help you set new *continuous* production records.



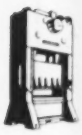
Inner door panels are being fed into this Danly Press where trimming and piercing operations are performed. Note how die block hanging on press behind operator is chained to plug in control circuit. Press cannot be inadvertently operated when block is in die opening. Conveyor is controlled by operator's foot switch.





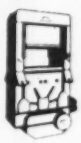
View of inspection operation at end of front floor pan stamping line. Locations of pierced holes in pan are being checked against master profile fixture with plug gauges.

It costs less to run a DANLY PRESS



Single Action Straight Side

Autofeed



Underdrive Single Double Triple Action

Gap Frame

Double Action Straight Side

MECHANICAL PRESSES . . . 50 TO 3000 TONS
HYDRAULIC METALWORKING EQUIPMENT

DANLY®

DANLY MACHINE SPECIALTIES, INC.
2100 South Laramie Avenue, Chicago 50, Illinois

WESTINGHOUSE 250 KV JIB CRANE X-RAY UNIT

Curtiss-Wright uses Westinghouse X-ray equipment for nondestructive testing of vital parts of their outstanding aircraft engines. Here, they're examining critical welds on gas turbine booster rotors. Prime reason for selection of Westinghouse equipment was *flexibility*—since *flexibility* results in more radiographs per shift.

Kilovoltage on this unit varies from 30 to 250, with greater X-ray output per KV because of constant potential high voltage generator. Result: unit is capable of inspecting materials ranging from 1/8" aluminum to 4" steel.

Jib crane tubestand and X-ray tubehead flexibility allows maximum ease of positioning in radiographing parts of all sizes and shapes. Result: time is saved, output is stepped up.

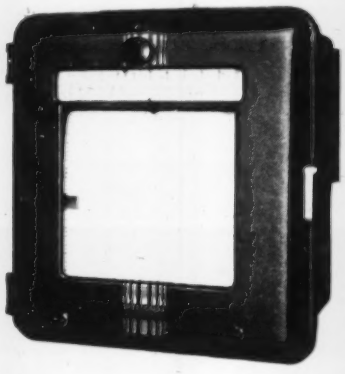
Call in the Westinghouse X-ray representative, or write Westinghouse Electric Corporation, Industrial X-ray Section, 2519 Wilkens Avenue, Baltimore, Maryland. 1-6256

YOU CAN BE SURE... IF IT'S

Westinghouse

NEW PRODUCTS and equipment

furnace. It does not record temperature-difference as such, but plots a record of high and low temperatures with width of recorded



band between them showing temperature difference. Leeds & Northrup Co., Dept. ST, 4934 Stenton Ave., Philadelphia 44, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 26

Carbon Dioxide Extinguishers

. . . feature squeeze type valves

Fyre-Freez portable carbon dioxide fire extinguishers feature squeeze type valves. Valve requires only normal hand pressure to actuate the extinguisher after safety pin has been removed. To recharge, the valve is squeezed open to permit recharge gas to enter cylinder. It is made in five sizes—2½, 5, 10, 15 and 20 pounds. Walter Kidde & Co. Inc., Dept. ST, 260 Madison Ave., New York 16, N. Y.

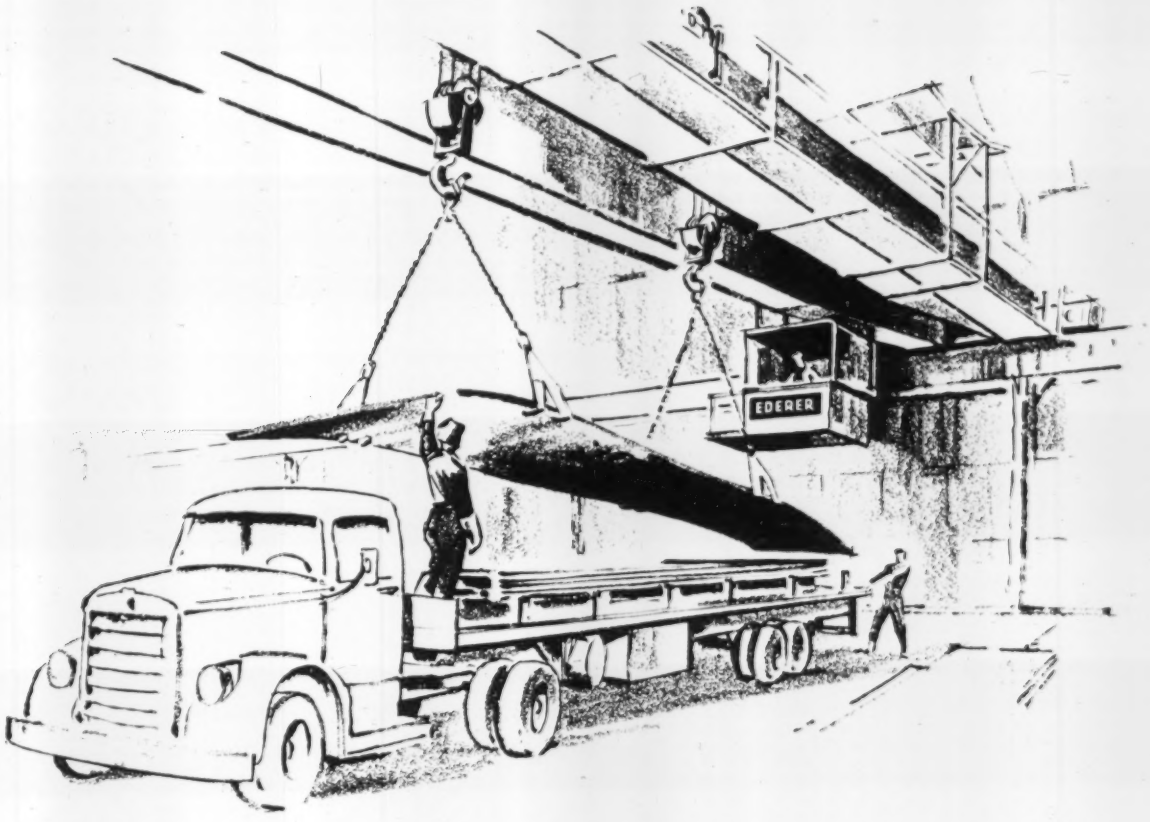
FOR MORE DATA—CIRCLE REPLY CARD NO. 27

Packing Compound

. . . has nonoxidizing lubricant

Molyseal is a self-molding packing compound that carries molybdenum sulphide as a nonoxidizing dry lubricant in its formula. It comes in Plasticks which are compressed into stuffing box by gland takeup. Pressure generated in this operation will induce cold flow and compound will assume shape of stuffing box. Molyseal will not leak or dry out in service over a period of years. Surveys Inc., Dept. ST, 219 Euclid Ave., Trenton 9, N. J.

FOR MORE DATA—CIRCLE REPLY CARD NO. 28



For steel warehouse service

Materials handling in a steel warehouse calls for a versatile, fast-operating crane. For one of A. M. Castle's warehouses, EDERER "job-engineered" this two-trolley, 10-ton, 70-foot span crane to handle steel plate rapidly and economically. This crane is typical of hundreds of cranes engineered and built by EDERER to meet exacting job requirements.

Whatever your industry, you have your particular handling requirements. EDERER—one of the largest crane manufacturers in the WEST—can "job-engineer" a crane to meet them. Delivery can be made to meet your schedule for plant expansion or new construction.

Write for Crane Bulletin CR-500

213C53

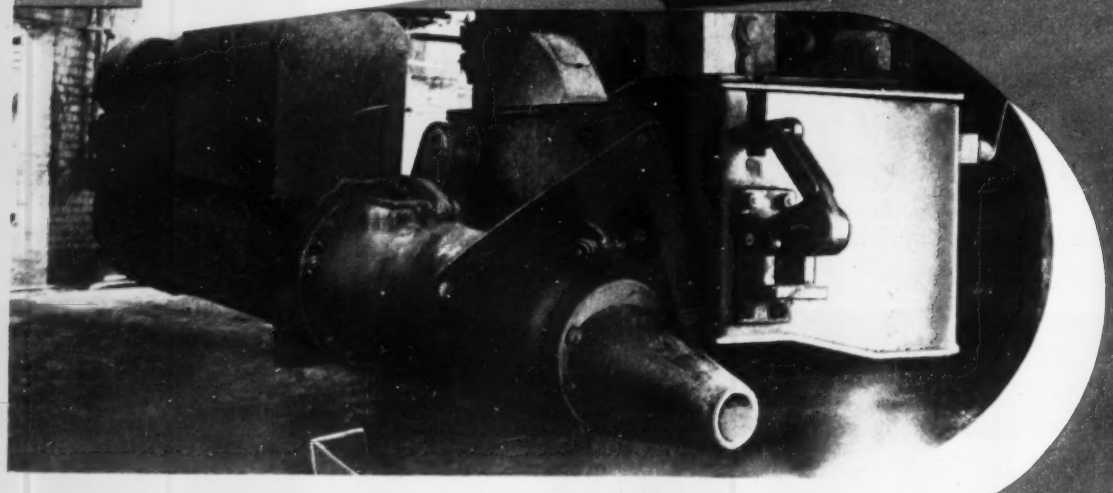
EDERER ENGINEERING COMPANY • 2931 First Ave. So. • Seattle 4, Wash.

Export Division: 301 Clay St., San Francisco 11, Calif.

EDERER
CRANES

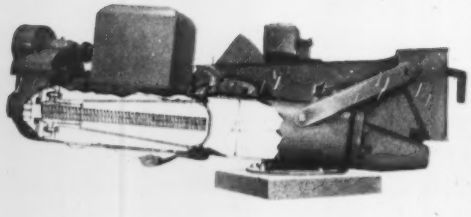
50 YEARS "JOB ENGINEERING" CRANES FOR INDUSTRY

Power... EXACTLY WHERE AND WHEN YOU NEED IT TO MAINTAIN LONG TAPPING HOLES



Bailey CLAY GUN

Here is the means to best results and safety in plugging blast furnace tapping holes. Positive closing every time the gun is used is assured by the exclusive Bailey pedestal support and lever mechanism. Operated by two separate motor drives, the gun is quickly, accurately and solidly positioned when the tap-hole is to be closed. Ample power to maintain long tapping holes is provided by an electrically-driven piston which develops a clay pressure of 600 pounds per square inch.



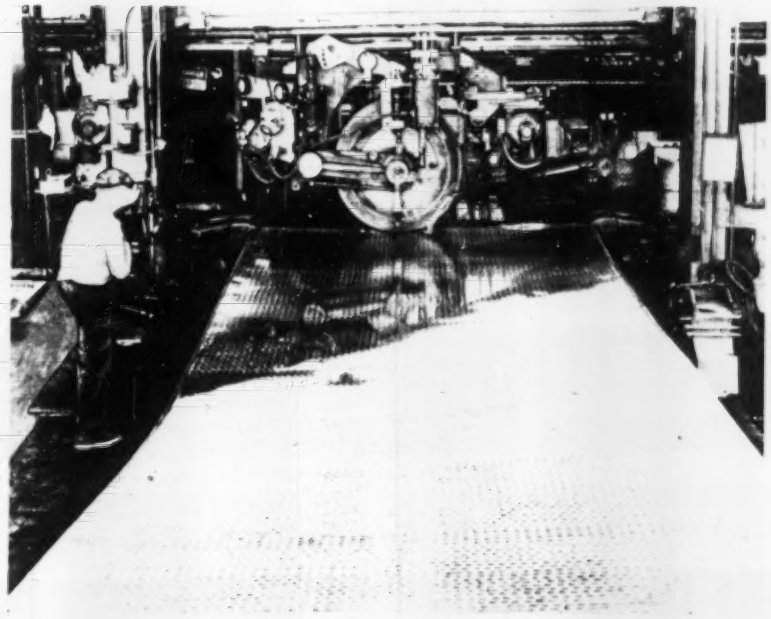
The Bailey Clay Gun is of the plunger type, in which the plunger is driven by a highly efficient power screw and double reduction gear drive.

WILLIAM M. Bailey COMPANY

ENGINEERS

LEADERSHIP THROUGH QUALITY

1221 BANKSVILLE ROAD PITTSBURGH 16, PA



First application of Hastelloy's new alloy F is in a paper and pulp digester tank. Thin alloy lining was spot-welded to the carbon steel backing

New Alloy Tough on Corrosion

Complex solid solution of nickel, chromium, molybdenum and iron handles oxidizing and reducing solutions with equal ease. Strength and workability are good

LONG RANGE research program of Haynes Stellite Co., division of Union Carbide & Carbon Corp., Kokomo, Ind., to discover an alloy which would withstand attacks of acids and alkalis, both reducing and oxidizing, has met with success. Called Hastelloy alloy F, the new metal is a tough nickel, molybdenum, chromium, iron mixture which exhibits excellent corrosion resisting characteristics.

Development stemmed from research aimed at producing an alloy intermediate in price, corrosion resistance, and workability between the austenitic stainless steels and the nickel-molybdenum alloys. Approximately 250 different alloys were tested before one was found which withstood reducing solutions and oxidizing solutions.

Corrosion Testing — Corrosion portion of the program consisted of testing the alloys in 65 per cent nitric acid at the boiling point a strongly oxidizing acid; boiling 10 per cent sulphuric acid a typical reducing acid; and a 10 per cent solution of aerated hydrochloric acid a strongly reducing acid. Resistance to pitting was evaluated by testing the alloys, at room temperature, in a 5 per cent ferric chloride solution containing 10 per cent sodium chloride. A few tests were conducted in wet chlorine at room temperature and in hypochlorite bleach solutions.

Nickel and molybdenum were considered essential ingredients if the alloy was to resist reducing conditions. However, these elements reduce the effectiveness of an alloy in oxidizing solutions. Chromium, an essential element for handling oxidizing solutions, lessens the resistance of an alloy in reducing conditions. Chromium and molybdenum were both needed to resist the pitting action in the ferric chloride solutions. Further improvement in pit resistance was gained when small amounts of columbium and tantalum were introduced into the alloys.

Physical-Mechanical Properties— Alloy F is stronger and about as tough as the austenitic stainless steels. It is ductile enough for intricate cold-forming operations but requires more power to deform than do the austenitic stainless steels. Strength does not change significantly after furnace cooling from temperatures in the 1000 to 2000 F range. Ductility is at its lowest in the 1300 to 1600 F range.

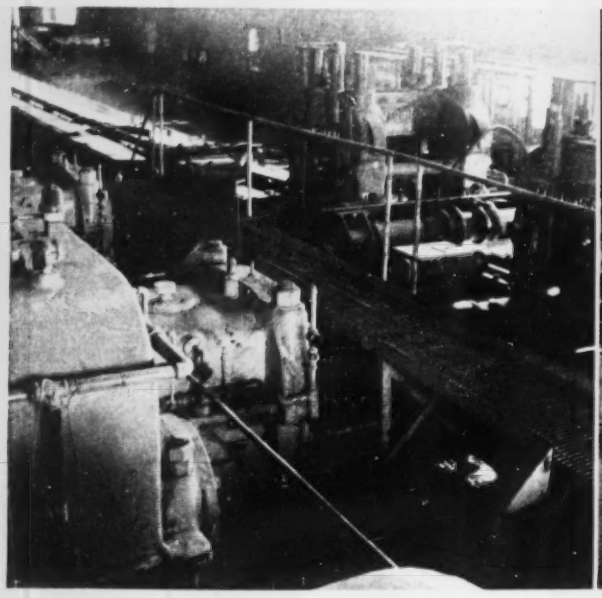
Density is similar to comparable nickel-base alloys. Its electrical resistance is somewhat higher than 18-8 and its thermal expansion characteristics are about 10 per cent lower. It is nonmagnetic and has a modulus of elasticity approaching that of steel. Thermal conductivity has not been fully determined, but indications are that it will be about the same as that of 18-8 stainless steel.

Galvanic Action Barred

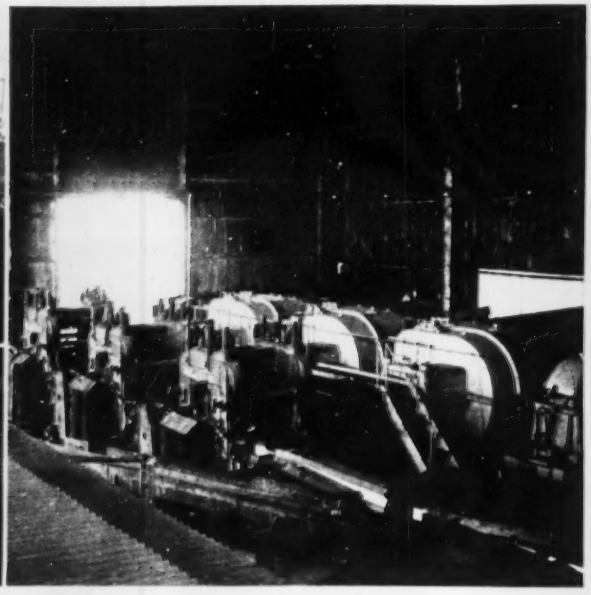
Stainless-steel wire thread inserts are preventing galvanic action between dissimilar metals in portable resistance-welding guns made by Progressive Welder Sales Co., Detroit.

Welding current is supplied to the welding gun yoke, which is made of a lightweight aluminum alloy developed by the manufacturer. Current follows a path from the cable attaching lug to the moving tip holder through a jumper made of electrolytically pure copper. Because of the high welding currents involved 5000 to 10,000 amp at 5 to 10 v galvanic action might occur where copper jumper is secured on cast aluminum-alloy yoke.

To preclude formation of an insulating layer of copper and aluminum oxides, an extremely tight assembly is required. When reinforced with wire inserts, threads tapped directly in comparatively soft aluminum alloy provide thread loading strengths substantially higher than unprotected threads. Use of the Heli-Coil Corp. inserts permits application of high installation torque to cap screws securing the copper jumper to the aluminum yoke on each welding gun.



Bloom starts through the first stand of the billet mill where it will be reduced to a 2¼-inch square by 350 feet. From ingot to bloom to billet requires only 3 minutes



Another view shows the three rolling stands and three gear reduction units operated by a single motor. Runout trough carries billet 470 feet to the billet shear house

Last of the MERRY-GO-ROUNDS

Keystone retires its repeater table in favor of a modern billet mill. Old mill will eventually end up in company open hearths, but not without fond memories

WHAT was the last repeater table in America used to produce billets is in retirement. Its replacement is the new 21-inch three-stand continuous billet mill that recently went into production at Keystone Steel & Wire Co., Peoria, Ill.

The old "merry-go-round" had served Keystone since 1917 when the mills were constructed. Though no longer operating, it has not yet been dismantled and can be used as stand-by. In fact, on several occasions it has already served a good purpose helping to iron out minor difficulties in starting up its successor.

Needed Capacity—Until recently, 2-inch billets were produced directly from 19 x 19-inch ingots on a 35-inch blooming mill. Now the 35-inch mill is delivering a 4 x 3-inch bloom produced from a 7000-pound ingot to the billet mill. The billet mill operating single strand reduces this bloom to a 2¼-inch square in three passes at an average output of almost 50 tons of billets per hour.

The new mill is expected to increase production of finished wire products by 15 per cent. Although this increase has not yet been attained there are definite indications that it should be realized in the near future.

Tricky Installation—One of the major problems encountered while installing the new billet mill was maintaining production through the old "merry-go-round" to the shear house, and being able to deliver a billet from the new mill to the same shear house when it was ready to operate.

This was accomplished by installing a duplicate runout trough which, it was obvious, would have to be on a slight angle. Putting a slight bend in the long bar leaving the billet mill was soon overcome by adding a hold down device in the runout trough.

New mill is equipped with roller twist guides, and after making some further slight changes in the guide boxes and entering guides, a considerable saving in roll and pass change time will be attained. Present plans are to tear out the old repeater table during the annual repair period in June.

Rebuilt Drive—A single 1750 hp.

FROM BANJO STRINGS

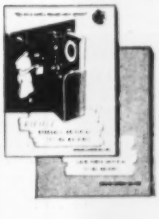
TO AIRPLANE WINGS

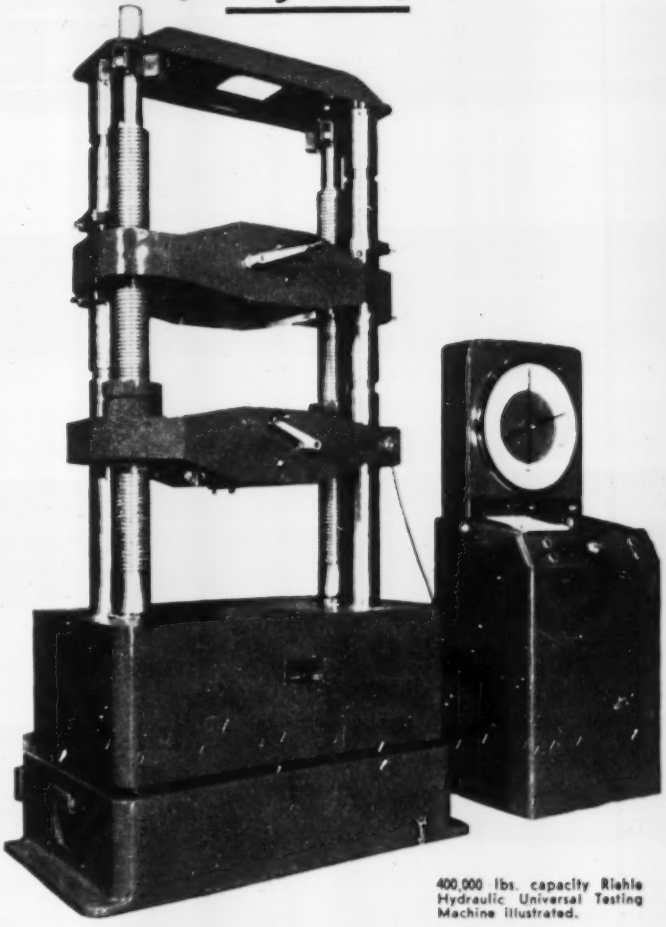
you can test practically anything with a

UNIVERSAL TESTING MACHINE

Every Riehle Pendomatic Universal Testing Machine has 5 standard scale ranges, so that it is actually the equivalent of 5 testing machines in one. You can test small specimens with a relatively low-rupture-point (banjo strings, for example) or large high-yield-point specimens (like airplane wings) all on the same Riehle machine. No accessories are needed; all you do is turn the selector knob to the desired range. Guaranteed accuracy is within ½ of 1%.

Riehle Universal Testing Machines are built both with hydraulic loading unit and with screw power loading unit. Each type is available in a variety of sizes, with capacities up through 400,000 lbs. Ask your Riehle representative or write our factory for illustrated catalogs.





400,000 lbs. capacity Riehle Hydraulic Universal Testing Machine illustrated.

RIEHLE TESTING MACHINES

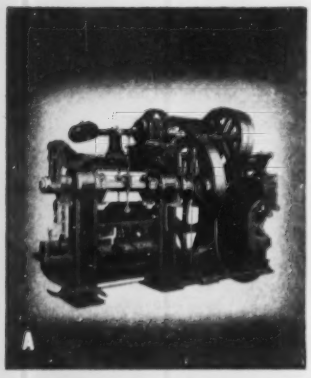
***Division of* AMERICAN MACHINE AND METALS, INC.**

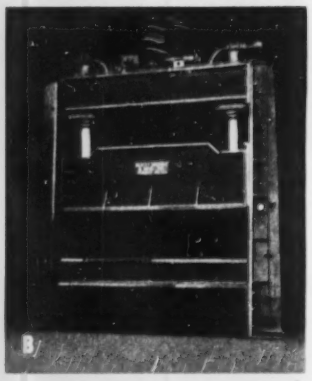
East Moline, Illinois

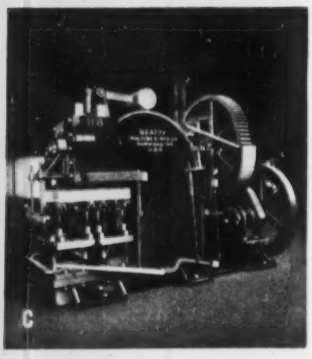
"ONE TEST IS WORTH A THOUSAND EXPERT OPINIONS"

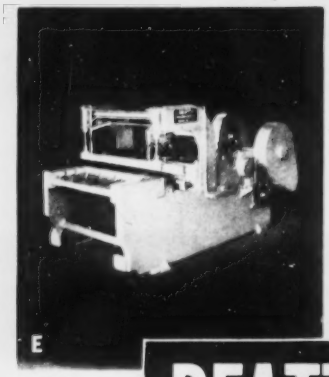
CRYSTAL-GAZER

You don't consult the occult when buying new equipment for industry. We're not fortune-tellers but we'll predict a bright future for any plant where BEATTY machines are added to the production lines. If one of the machines shown doesn't answer your particular needs, we'll design and build one that will. Call a BEATTY engineer for experienced help whenever production problems are considered.









BEATTY
MACHINE & MFG. CO.
HAMMOND • INDIANA

A. BEATTY Co-Pun-Shear, one unit that does coping, punching and shearing without changing tools.

B. BEATTY Vertical Hydraulic Bulldozer for hot and cold pressing and forming of heavy metal.

C. BEATTY Heavy Duty Punch that handles steel up to 65 ft. long. Punches webs, and flanges.

D. BEATTY Press Brake and Flanger handles any type of bending, forming, flanging, pressing.

E. BEATTY Horizontal Multiple Punch for line punching of vertical flanges.

Big factor in increasing output of the entire line is this bloom crop shear. Crop falls into a crop car which is submerged in water. The entire operation is done electrically

2300 volt, 300 rpm slip ring motor drives the new mill. This motor was originally used at Keystone as a 2000 hp, 450 rpm unit to operate a motor generator set for the main drive of the blooming mill. Under direction of the chief electrical engineer, the motor was rebuilt and rewound to operate the new mill.

Important addition to the improved blooming mill operation is the electrically operated crop shear. Fast shear of the bloom helps speed rolling time on the line to match the increased speed of the new billet mill. Bloom crops slide into an electrically operated crop car beneath the shear, and the bloom goes on to billet stands.

Final Epitaph—While extremely happy with their new mill, Keystone officials are nostalgic over the close of the repeater table era. Not only was its operation somewhat spectacular, they report that it produced an unusually high quality product. The mill's ultimate end, not too far away, will be as scrap to charge company open-hearth furnaces.

The mill replacement is another step in Keystone's expansion program of the last 18 months. Building of a fourth open-hearth furnace, enlarging of the soaking pits, and modernization in blooming and billet mills have all taken place in that time.

SuVeneer®

STAINLESS

CLAD METAL

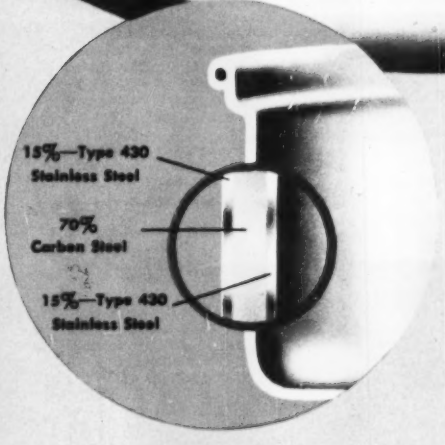
Wonderful for Cooking

★ Heats Easily

★ Heats Rapidly

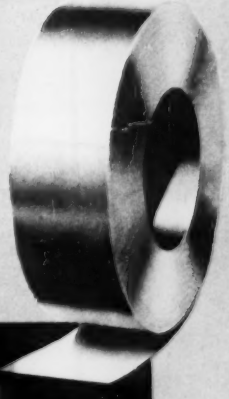
★ Heats Evenly

★ Ideal for your fabrication methods



Fast, Even Heat Diffusion . . . No Hot Spots!

The word travels fast among consumers: get *stainless-clad* utensils now for better cooking . . . easy cleaning . . . stay-bright beauty! And the utensil maker says SuVENEER Stainless Clad Metal . . . for fabricating ease . . . for sales! Stainless both sides, mild steel in the center, furnished in coiled strip. Size, temper, finish to your specification. *Write.*

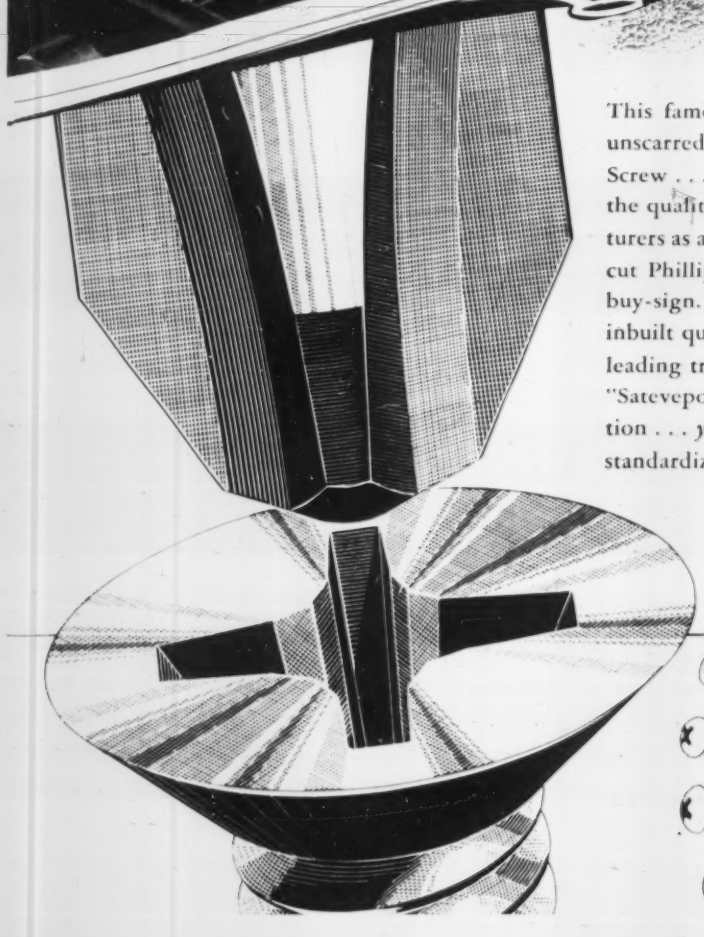


Superior Steel
CORPORATION
CARNEGIE, PENNSYLVANIA

THE AMERICAN STORY

CHAPTER EIGHT

The Clue that Clinches



This famous *"Clue to Quality"* . . . the goodlooking, unscarred head of an American Phillips Recessed-Head Screw . . . is being searched for more, every day, by the quality buyer. Long accepted by leading manufacturers as a guardian *both* of costs and quality, the clean-cut Phillips Recess has also become a national retail buy-sign. It's a readily recognized outward mark of inbuilt quality, underscored by national advertising in leading trade and consumer magazines, including the "Satevepost". Yes, you not only step up your production . . . *you step up your sales as well* . . . when you standardize *all* assemblies on American Phillips Screws.

AMERICAN SCREW COMPANY

PHILLIPS HEADquarters
WILLIMANTIC, CONNECTICUT

Main Office & Plant
Willimantic, Connecticut
Office & Plant, Norristown, Pa.
Office & Warehouse, Chicago, Ill.

CALENDAR
OF MEETINGS

April 20-22, Metal Powder Association: Annual meeting and exhibit, Hotel Cleveland, Cleveland. Association address: 420 Lexington Ave., New York 17. Secretary: Robert L. Ziegfeld.

April 20-22, AIME Blast Furnace, Coke Oven & Raw Materials Committee and National Open Hearth Steel Committee: Annual conference, Hotel Statler, Buffalo. Institute address: 29 W. 39th St., New York 18.

April 20-23, American Management Association: National Packaging Exposition: Navy Pier, Chicago. Association address: 330 W. 42nd St., New York 36. Information: Donald G. Keen.

April 20-23, National Screw Machine Products Association: Spring meeting, Hotel St. Moritz, New York. Association address: 2860 E. 130th St., Cleveland 20. Secretary: Orrin B. Werntz.

April 20-23, Society of Automotive Engineers: Aeronautic production forum; national aeronautic meeting, and aircraft engineering display, Hotels Governor Clinton & Statler, New York. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

April 21-23, Caster & Floor Truck Manufacturers Association: Spring meeting, Edgewater Beach hotel, Chicago. Association address: 27 E. Monroe, Chicago. Secretary: H. P. Dolan.

April 22-23, American Institute of Steel Construction Inc.: Spring engineering conference, Detroit Engineering Society Bldg., Detroit. Institute address: 101 Park Ave., New York. Executive vice president: L. Abbett Post.

April 25, American Society for Metals, Indiana Chapters: Annual spring symposium, Purdue University, W. Lafayette, Ind. Information: A. D. Carvin, Joslyn Stainless Steels, Ft. Wayne, Ind.

April 26-30, American Ceramic Society: Annual meeting, Hotel Statler, New York. Society address: 2525 N. High St., Columbus 2, O. Secretary: Charles S. Pearce.

April 27-28, American Zinc Institute Inc.: Annual meeting, Hotel Statler, St. Louis. Institute address: 60 E. 42nd St., New York 17. Secretary: E. V. Gent.

April 27-28, Galvanizers Committee, American Zinc Institute: Annual meeting, Hotel Statler, St. Louis. Institute address: 60 E. 42nd St., New York 17. Secretary-Treasurer: E. V. Gent.

April 27-28, Independent Petroleum Association of America: Midyear meeting, St. Louis. Association address: Box 1019, Tulsa, Okla. President: Charlton H. Lyons.

April 27-28, Copper & Brass Research Association: Annual meeting, Drake hotel, Chicago. Association address: 1420 New York Ave. NW, Washington 5. Corresponding secretary: Mrs. Elizabeth Dyer.

April 27-May 2, Concrete Reinforcing Steel Institute: Annual spring meeting, The Carolina, Pinehurst, N. Carolina. Institute address: 38 S. Dearborn St., Chicago 3. Managing director: H. C. Delzell.

April 27-May 8, British Industries Fair: Castle Bromwich, Birmingham, and Earls Court, London, Eng. Information: Larry Nixon, 575 Madison Ave., New York 22.

April 28-30, American Society of Mechanical Engineers: Spring meeting, Deshler-Wallick hotel, Columbus, O. Society address: 29 W. 39th St., New York 18. Secretary: C. E. Davies.

April 29-May 1, Boston Section, American Institute of Electrical Engineers: Northeastern district meeting, Hotel Sheraton Plaza, Boston. Institute address: 33 W. 39th St., New York.

April 29-May 1, Radio-Television Manufacturers Association: Electronic components symposium, Shakespeare Club, Pasadena, Calif. Information: Suite 1011, 621 S. Hope St., Los Angeles 17.

May 3-7, Liquefied Petroleum Gas Association: Annual meeting and exhibit, Hotel Conrad Hilton, Chicago. Association address: 11 S. LaSalle St., Chicago 3. Secretary: Arthur C. Kreutzer.

May 4-6, National Small Businessmen's Association: Annual meeting, Hotel Mayflower, Washington. Association address: Evanston, Ill. Vice president: A. W. Kimball.

May 4-6, Automotive Engine Rebuilders Association: Annual spring meeting, Netherland Plaza hotel, Cincinnati. Association address: 419 N. Capitol Ave., Indianapolis. Executive vice president: R. G. Patterson.

May 4-8, American Foundrymen's Society: Annual meeting, Chicago. Society address: 616 S. Michigan Ave., Chicago 5. Secretary: W. W. Maloney.

May 6-7, National Metal Trades Association: Mid-Atlantic assembly, Bellevue-Stratford hotel, Philadelphia. Association address: 549 W. Randolph St., Chicago. Secretary: Louie W. Silvis.

May 6-8, American Society of Training Directors: Annual meeting, Sheraton Plaza hotel, Boston. Society address: 2020 University Ave., Madison 5, Wis. Secretary: Russell L. Moberly.

May 6-8, Porcelain Enamel Institute: Mid-year divisional meetings, Edgewater Beach hotel, Chicago. Institute address: 1346 Connecticut Ave. NW, Washington 6. Secretary: John C. Oliver.

May 7-8, The Wire Association: Regional meeting, Mt. Royal hotel, Montreal. Association address: 453 Main St., Stamford, Conn. Executive secretary: Richard E. Brown.

May 8, American Society for Metals: New England regional meeting, Hotel Bond, Hartford, Conn. Information: Walter E. Borin, Underwood Corp., Hartford 6, Conn.

May 7-8, Industrial Fasteners Institute: Annual meeting, Westchester Country Club, Rye, N. Y. Institute address: 3648 Euclid Ave., Cleveland. Secretary: James D. Eggers.

May 11-13, Rail Steel Bar Association: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: 38 S. Dearborn St., Chicago 3. Secretary: W. H. Jacobs.

May 11-14, American Mining Congress: Annual meeting and exposition, Public Auditorium, Cleveland. Congress address: 1102 Ring Bldg., Washington 6. Executive vice president: Julian D. Conover.

May 14, Conference, Instrumentation in Water, Sewage and Industrial Waste Treatment: Manhattan College, New York. Information: Joseph McCabe, Civil Engineering Dept., Manhattan College.

May 14-15, National Association of Sheet Metal Distributors: Spring meeting, Deshler-Wallick hotel, Columbus, O. Association address: 1900 Arch St., Philadelphia 3. Secretary: Thomas A. Fernley Jr.

May 14-16, American Coal Sales Association: Annual spring meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: 1625 Eye St. NW, Washington. Executive vice president: W. W. Bayfield.

May 14-16, American Institute of Mining & Metallurgical Engineers: Pacific Northwest metals and minerals conference, Hotel Benjamin Franklin, Seattle. Institute address: 29 W. 39th St., New York 18. Secretary: E. H. Robie.

May 18-19, National Fluid Power Association: Organization meeting, Bedford Springs hotel, Bedford Springs, Pa. Association address: 1618 Orrington Ave., Evanston, Ill. Temporary executive secretary: Barrett Rogers.

May 18-19, Association of Iron & Steel Engineers: Spring meeting, Hotel Statler, Buffalo, N. Y. Association address: 1010 Empire Bldg., Pittsburgh. Secretary: T. J. Ess.

May 18-20, Industrial Furnace Manufacturers Association: Annual meeting, The Homestead, Hot Springs, Va. Association address: 420 Lexington Ave., New York.

May 18-22, Material Handling Institute: National Material Handling Exposition, Convention Hall, Philadelphia. Institute address: 811 Clark Bldg., Pittsburgh 22. Managing director: R. Kennedy Hanson.

May 18-22, Conference, Cam Design and Tool Selection: Rochester Institute of Technology, Rochester, N. Y. Information: Robert D. Pease, associate director, RIT.

May 20-22, Gas Appliance Manufacturers Association: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: 60 E. 42nd St., New York 17. Secretary: H. Leigh Whitelaw.

Headquarters for

52100

Steel Tubing and Bars

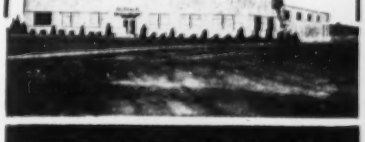
Largest Stocks in the Country

of this versatile steel. 52100 is hard, tough and long-wearing, yet it's easy to machine and is right for bearings, sleeves, pins, collars and many other machine parts.

Over 200 seamless tube sizes to choose from .898" O.D. to 8.250" O.D. Bar sizes from .171" round to 7.5" round. Also ring forgings in any analysis.

Write for our Latest Stock List Now

New Headquarters of Peterson Steels, Inc., Union, New Jersey



PETERSON STEELS, INC.

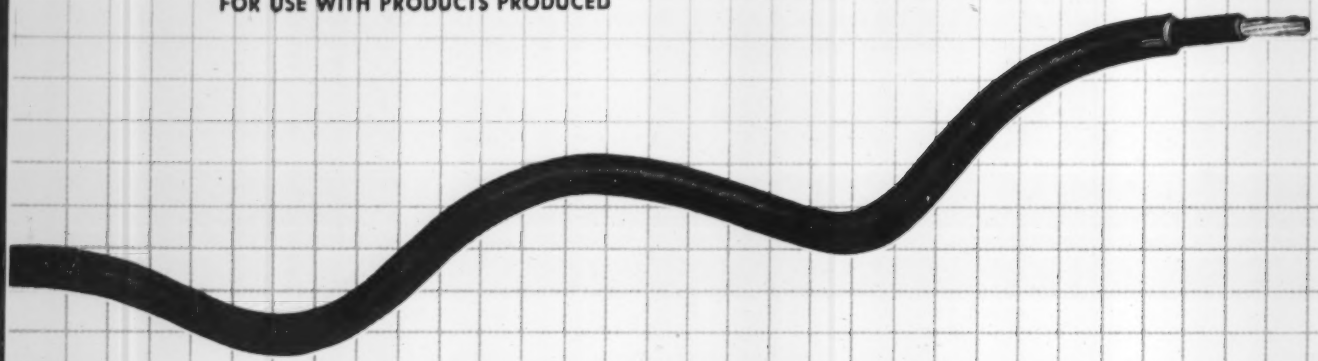
DEPT. S, SPRINGFIELD ROAD

UNION, NEW JERSEY

Detroit, Mich. • Chicago, Ill.

WITH EVER NEW PEAKS IN

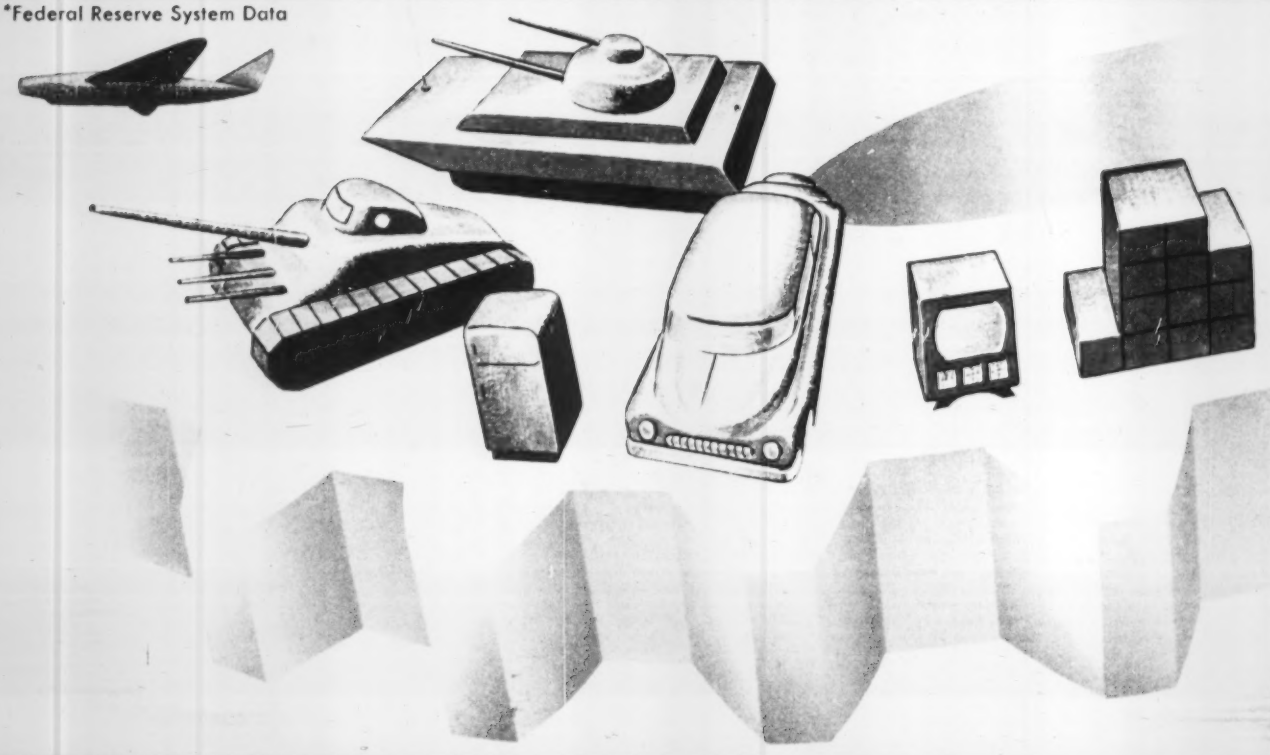
GENERAL CABLE SHIPMENTS
FOR USE WITH PRODUCTS PRODUCED



NATIONAL PRODUCTION GROWTH*

1944 1945 1946 1947 1948 1949 1950 1951 1952

*Federal Reserve System Data

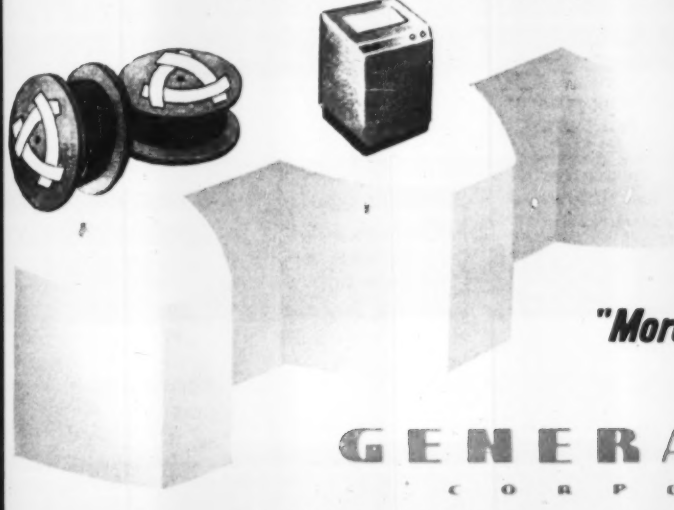


NATIONAL PRODUCTION...

GENERAL CABLE

Still means Consistent Dependable Supply

During a 70 year span as a prime supplier of wire and cable to every industry, General Cable's growth has been part of America's ever-mounting national production. Anticipating production trends—with our sights always toward growth—our production is planned for smooth, adequate supply. Evidence is in the thousands of varied wires and cables manufactured in the chain of strategically located General Cable manufacturing plants. Your needs are serviced through our sales offices . . . through our wholesalers . . . from plants, warehouses, and distributor stocks that blanket the country from coast to coast, and from our northern border to the Gulf of Mexico.



"More Power to You"®

GENERAL CABLE

CORPORATION

EXECUTIVE OFFICE: 420 LEXINGTON AVENUE, NEW YORK 17, NEW YORK • SALES OFFICES IN PRINCIPAL CITIES OF THE UNITED STATES

SCREWS • NUTS • BOLTS

in a hurry? need large quantities?

PHEOLL SHIPS from HUGE STOCKS

give us a call!

Do you have production, purchasing, stocking or delivery problems on threaded fasteners? Pheoll . . . the COMPLETE source . . . has all the answers! And here they are:

STOCKS? Pheoll has 'em . . . largest in the industry . . . kept up to level by perpetual inventory controls!

TYPES AND SIZES? Pheoll has 'em . . . the industry's *most complete line* . . . by types, head styles, finishes and sizes!

LARGE ORDERS? Pheoll can generally ship *immediately* on most standard types and sizes!

STOCK INFORMATION? Always available for immediate reply to phone calls, telegrams or letters!

QUALITY? Tops for 50 years . . . kept that way by constant production line and laboratory inspection!

FAST SHIPMENT? Yes! Efficient mechanized order-handling procedures minimize errors and hustle orders along to fast, sure completion!

In every way, *you get better service at Pheoll!* That means less work for you . . . fewer orders, reduced paper work, less follow-up, simplified stocking. Test Pheoll on your next threaded fastener requirement and see how headaches vanish!

PHEOLL MANUFACTURING COMPANY

SCREWS BOLTS NUTS

5700 ROOSEVELT ROAD • CHICAGO 50, ILLINOIS

Enamel Prolongs Tube Life

TROUBLESOME and costly pitting and scaling of radiant tubes in heat treating furnaces is effectively combatted by coating the tubes with a special vitreous enamel developed for jet engine parts, reports Lindberg Engineering Co., Chicago.

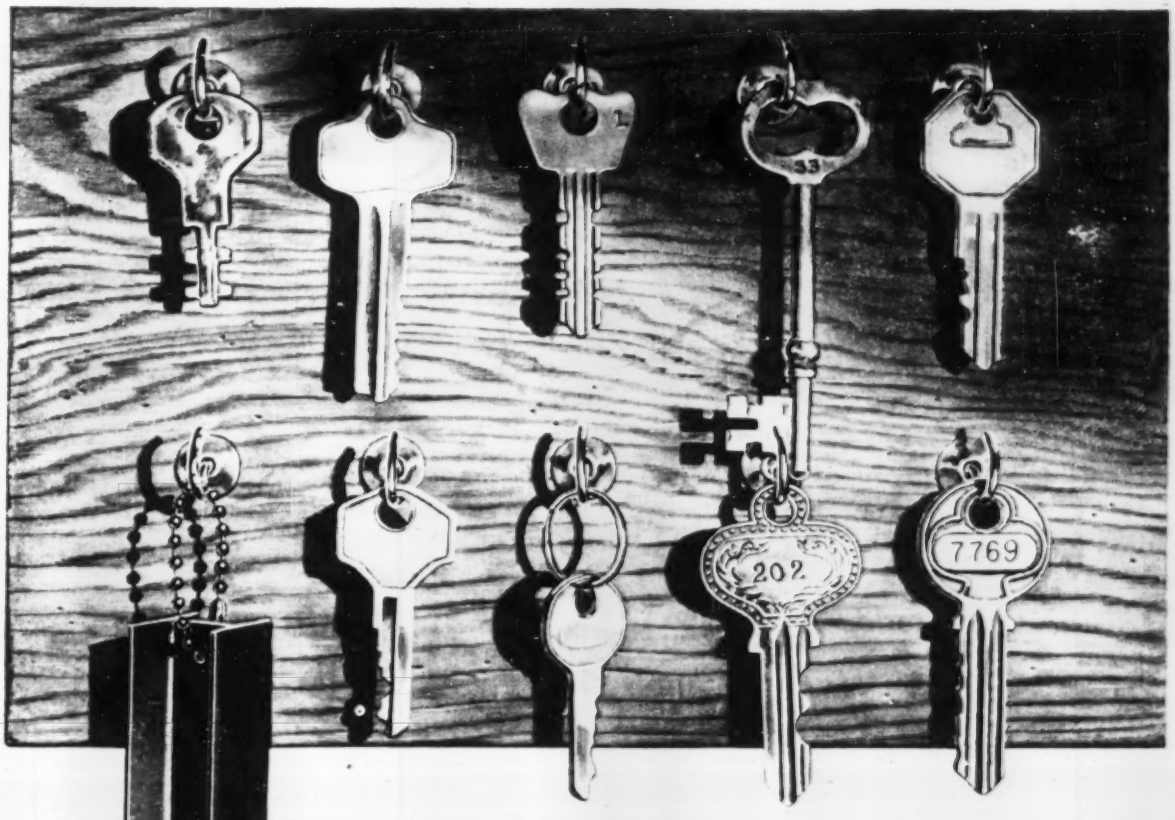
The effect of carbon from the rich carburizing gases and sulphur from cutting oils which occasionally appears on parts to be carburized or nicarbed has cut short the life of these tubes. Even the Inconel tubes, installed to prevent

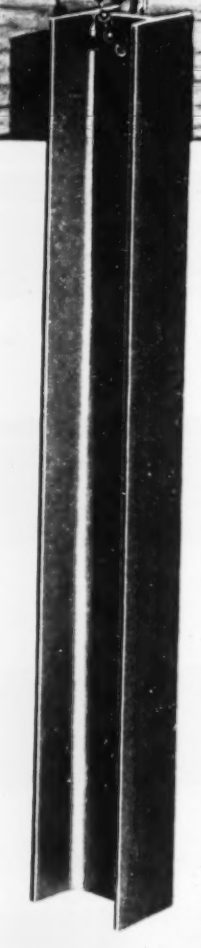
CARBON AND SULPHUR SCALE
. . . ceramic protects the tubes

temperature attack, eventually deteriorate in the rich atmospheres.

Accelerated Test—Tubes in the above picture were exposed to particularly severe service for four months. The two left hand tubes were not coated and the end tube was enameled both inside and out and fired at 1900° F. Pitting, very apparent on the left hand tubes, is caused by sulphur; and the white streaks and scabs are caused by carbon attack.

The right hand tube, however, shows no evidence of either effect. Additional applications of enamel coatings in other furnace parts, including thermocouple tubes, are being investigated. Company officials believe that enameling of alloys is highly beneficial to the protection against chemical action, and that other alloys of lower nickel content will prove satisfactory when treated with this protective coating.





New key to Western progress

Production of Wide Flange Beams by Kaiser Steel—the first produced west of the Mississippi—is a new key factor in the expansion of western industry.

For western construction men now have a *dependable, nearby* source of supply for this vital structural shape.

Larger in sectional area than other beams of a similar type, Kaiser Steel Wide Flange sections offer a bonus in extra strength. They are readily interchangeable in all normal structures with other Wide Flange beams.

Two sizes are produced in each group from 8 to 16 inches.

The addition of Wide Flange sections to the standard shapes produced by Kaiser Steel widens our line of popular structurals which can be efficiently employed in the design and construction of modern structures.

More evidence that . . .

It's good business to do business with

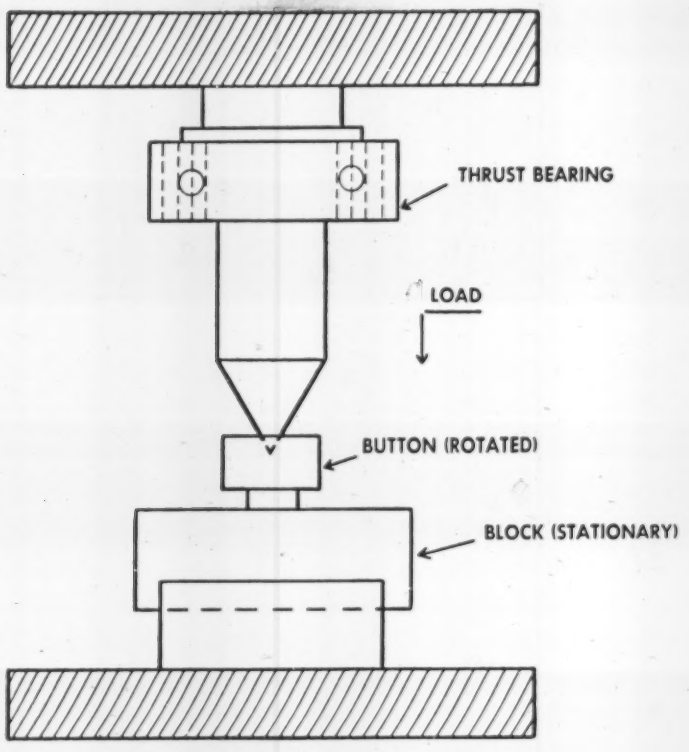
Kaiser Steel

built to serve the West

PROMPT, DEPENDABLE DELIVERY AT COMPETITIVE PRICES • plates • continuous weld pipe • electric weld pipe • hot rolled strip • hot rolled sheet alloy bars • carbon bars • structural shapes • cold rolled strip • special bar sections • semi-finished steels • pig iron • coke oven by-products
For details and specifications, write: **KAISER STEEL CORPORATION, LOS ANGELES, OAKLAND, SEATTLE, PORTLAND, HOUSTON, TULSA, NEW YORK**

By H. TANCZYN
Armco Steel Corp.
Middletown, O.

New testing method at Armco establishes galling load points for most stainless alloys. Graphical data will take the guesswork out of selecting proper steel



Arrangement for galling test shows how test blocks are loaded and rotated on the stationary block. Blocks are examined for galling after each turn

Stainless Steel Galling Characteristics Checked

PREVENTION of galling and seizure of stainless steel surfaces moving over one another is a unique problem. Ordinary lubrication methods are not usually practicable for stainless equipment due to the hazards of product contamination. Yet, little published information has been available to manufacturers who have often applied stainless steels on the basis of their experience with carbon steels.

An investigation, conducted in the research laboratories of Armco Steel Corp., Middletown, O., developed both a testing method and the galling characteristics of various stainless steels. Work was limited to study of relatively slow and restricted movements of stainless steel surfaces over one another.

Several Methods Tried — Galling test described in this article was adopted after a number of methods involving the use of torque wrenches, strain gages, and nut and bolt assemblies had been studied. The polished base of a cylinder section is rotated under pressure against a polished block surface for one revolution. A series of assemblies is compressed under increasing loads until galling occurs.

Test specimens were cleaned with fresh acetone before testing. Loading control was adjusted to maintain constant load during rotation, but a slight drop-off usually occurred during tests. After testing, both specimens were examined for galling at 30 x magnification and the galling load converted to psi based on contact area. Data were reproducible to within 125 psi at loads under 1000 pounds and within 250 psi at higher loads.

Surface Influence — Where specimens were prepared with machined surfaces, results of the preliminary tests were not reproducible. With machined surfaces, one member of the assembly usually ploughed through the second piece like a cutting tool. Small torn areas on machined surfaces locked together during testing to produce galling.

Test specimens finished with 3/0 metallographic polishing paper, however, gave reproducible data. More experimenting was done with smoother surfaces produced by

polishing on cloth-covered wheels. But considerable difficulty was encountered in maintaining a plane surface on the specimens so the 3/0 paper finish was used for all further tests.

Test Results—The data obtained in the galling tests are summarized in the bar graphs. Brinell hardness values are given with the grade designation.

Influence of sulphur and selenium additions on the galling resistance of stainless steels is easily seen. The added sulphur and selenium reduce the frictional forces between the stainless steel specimens.

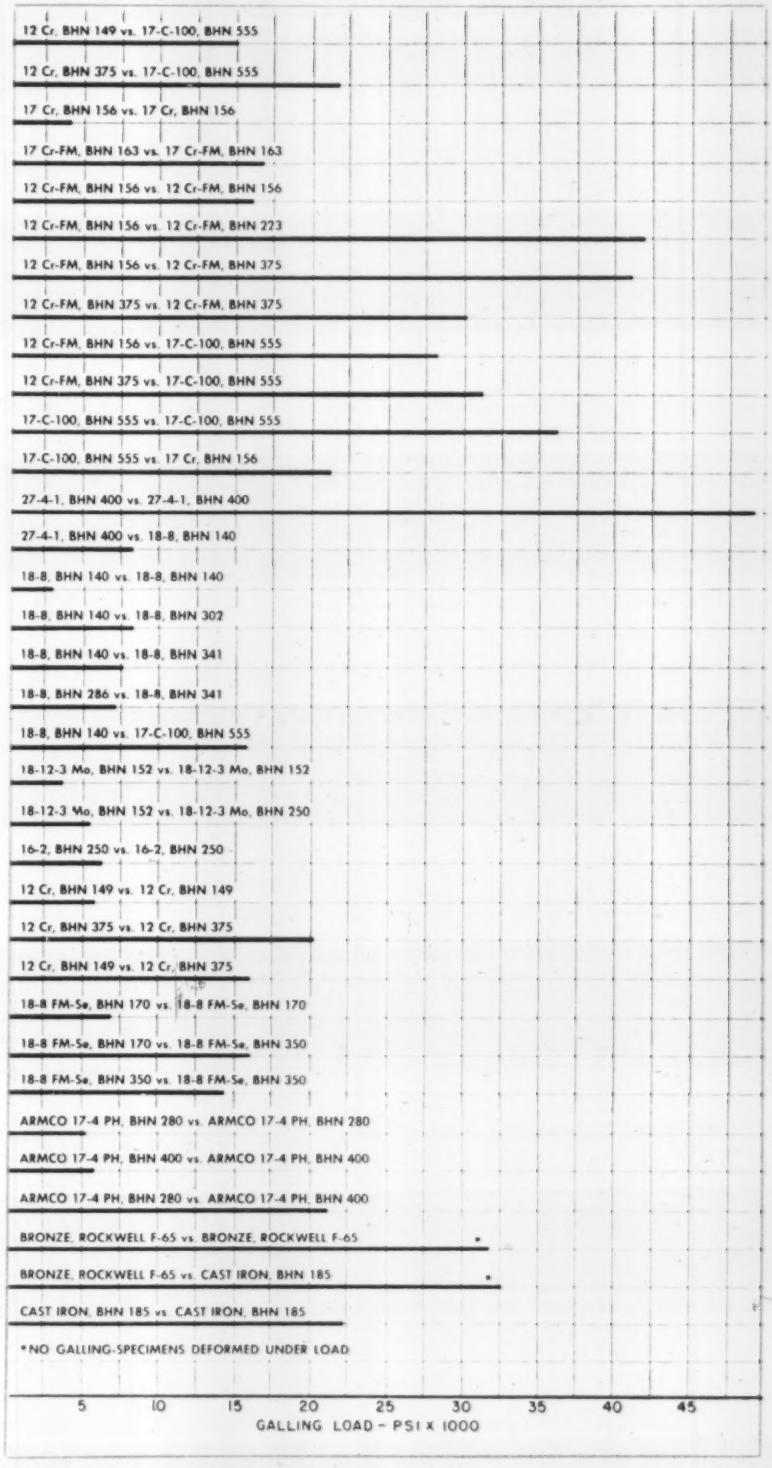
Merchant and Zlatin[1] report that the coefficient of friction for type 303-S stainless steel is about 76 per cent of that for type 304 stainless steel. Apparently the sulphides are smeared over the stainless steel surfaces to form a low shear strength film which interferes with the metal-to-metal contact.

Hardness Is Factor—Generally, stainless steel sections at a relatively high hardness level, or with a substantial difference in hardness, exhibit better resistance to galling than the combination of two soft members. Since there may be no change in chemical composition, this relationship between hardness and resistance to galling is probably due to the difference in mechanical properties of the hardened and soft specimen.

Here Bowden and Tabor[2] offer the explanation that the hardened sections deform elastically near the contact points under loading, while the softer, weaker pieces yield plastically for a significant distance beneath the contact points.

During movement, hardened surfaces may recover elastically with decrease in pressure and this motion tends to sever any metallic welding. Yet in the case of the soft specimens, the surfaces probably continue to adhere closely during the movement of the specimens with relatively little elastic recovery and separation.

Some Oxides Good—The exceptionally good resistance to galling exhibited by type 329 stainless steel is very likely traceable to a combination of a suitable oxide surface film and the hard backing

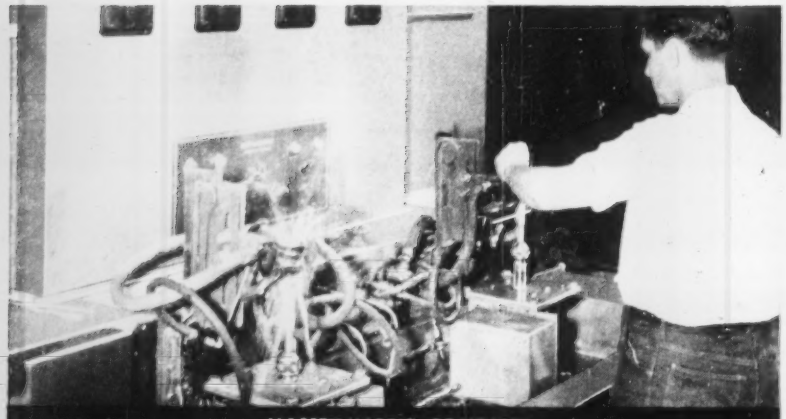

12 Cr, BHN 149 vs. 17-C-100, BHN 555
12 Cr, BHN 375 vs. 17-C-100, BHN 555
17 Cr, BHN 156 vs. 17 Cr, BHN 156
17 Cr-FM, BHN 163 vs. 17 Cr-FM, BHN 163
12 Cr-FM, BHN 156 vs. 12 Cr-FM, BHN 156
12 Cr-FM, BHN 156 vs. 12 Cr-FM, BHN 223
12 Cr-FM, BHN 156 vs. 12 Cr-FM, BHN 375
12 Cr-FM, BHN 375 vs. 12 Cr-FM, BHN 375
12 Cr-FM, BHN 156 vs. 17-C-100, BHN 555
12 Cr-FM, BHN 375 vs. 17-C-100, BHN 555
17-C-100, BHN 555 vs. 17-C-100, BHN 555
17-C-100, BHN 555 vs. 17 Cr, BHN 156
27-4-1, BHN 400 vs. 27-4-1, BHN 400
27-4-1, BHN 400 vs. 18-8, BHN 140
18-8, BHN 140 vs. 18-8, BHN 140
18-8, BHN 140 vs. 18-8, BHN 302
18-8, BHN 140 vs. 18-8, BHN 341
18-8, BHN 286 vs. 18-8, BHN 341
18-8, BHN 140 vs. 17-C-100, BHN 555
18-12-3 Mo, BHN 152 vs. 18-12-3 Mo, BHN 152
18-12-3 Mo, BHN 152 vs. 18-12-3 Mo, BHN 250
16-2, BHN 250 vs. 16-2, BHN 250
12 Cr, BHN 149 vs. 12 Cr, BHN 149
12 Cr, BHN 375 vs. 12 Cr, BHN 375
12 Cr, BHN 149 vs. 12 Cr, BHN 375
18-8 FM-Se, BHN 170 vs. 18-8 FM-Se, BHN 170
18-8 FM-Se, BHN 170 vs. 18-8 FM-Se, BHN 350
18-8 FM-Se, BHN 350 vs. 18-8 FM-Se, BHN 350
ARMCO 17-4 PH, BHN 280 vs. ARMCO 17-4 PH, BHN 280
ARMCO 17-4 PH, BHN 400 vs. ARMCO 17-4 PH, BHN 400
ARMCO 17-4 PH, BHN 280 vs. ARMCO 17-4 PH, BHN 400
BRONZE, ROCKWELL F-65 vs. BRONZE, ROCKWELL F-65 *
BRONZE, ROCKWELL F-65 vs. CAST IRON, BHN 185 *
CAST IRON, BHN 185 vs. CAST IRON, BHN 185
*NO GALLING-SPECIMENS DEFORMED UNDER LOAD
5
10
15
20
25
30
35
40
45
GALLING LOAD - PSI x 1000

These data on the galling loads for the various alloys are reproducible to within 125 psi at loads under 1000 pounds and within 250 psi above that

Oxide films significantly influence the galling characteristics of metals. Recent work reported in the literature[3] indicated that while a film of Fe_2O_3 increased the resistance of mild steel to galling, a film of Fe_2O_3 did not benefit the steel for this purpose.

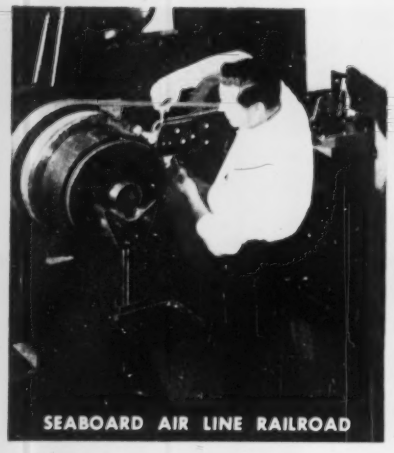
A relatively new precipitation hardening stainless steel, Armco

Industries

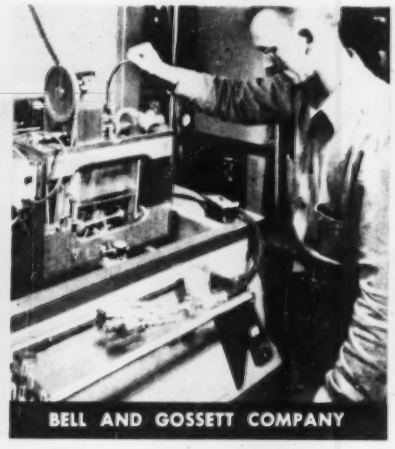


MASSEY-HARRIS COMPANY

across the nation



SEABOARD AIR LINE RAILROAD



BELL AND GOSSETT COMPANY

UP Production with Westinghouse Induction Heating

Production rates upped by 50% to 2000%! Time savings up to 80%! Space savings up to 90%! Figures like these in company after company tell the Westinghouse story. Across the nation, Westinghouse installations are saving time and money—and doing a better job to boot!

What is your heat-treating problem? Hardening? Annealing? Heating? Metal Joining? Westinghouse Induction Heating may be the answer.

For full information write: Westinghouse Electric Corporation, Electronics Division, Department 62-1, 2519 Wilkens Avenue, Baltimore, Maryland.

YOU CAN BE SURE...IF IT'S Westinghouse

J-02262

17-4 PH, is considered to be a useful substitute for type 304 stainless steel in applications involving galling, particularly if used in two conditions to obtain the desired differential in hardness between components.

The data from these tests should be useful to manufacturers in selecting stainless steels for applications where galling occurs, especially in limited, relatively slow movement of stainless steels over one another, such as in valves and threaded assemblies.

REFERENCES

1. M. Eugene Merchant and Norman Zlatin: Basic Reasons for Good Machinability of "Free Machining" Steels. *Trans. Am. Soc. Metals* (1949) Vol. 41, p. 663.

2. F. P. Bowden and D. Tabor: The Ploughing and Adhesion of Sliding Metals. *Journ. of Applied Physics*, (1943) Vol. 14, p. 90.

3. R. L. Johnson, D. Godfrey and E. E. Bisson: Friction of Solid Films on Steel and High Sliding Velocities. *NACA Technical Note No. 1578*, April, 1948, p. 6.

AF Eyes Casting Potential

KEEPING its eye on the castings industry for cost-cutting possibilities, the Air Force has set up at the Air Materiel Command, Wright-Patterson Field, Dayton, O., a project known as Casting Potentials. Goal is to "determine the extent to which castings can replace more expensively fabricated parts of airframes".

According to Brig. General William T. Hefley of the Air Materiel Command, guided missiles open a whole new field to the foundry industry. He adds, "for quantity production, we will be shopping for the cheapest disposable container that will do the job—and everything points to the foundry industry as a logical place to get it."

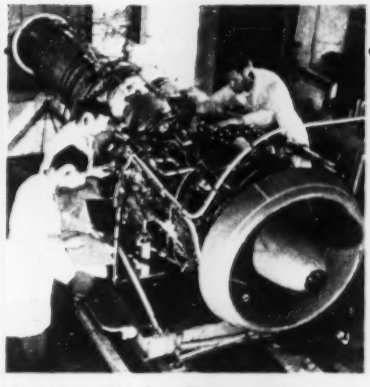
One-Piece Wings — Possibilities for casting the wings of the F-94 all-weather interceptor in one piece are under study. Single-piece fabrication here is vital, for each wing tip when flying at 600 mph, must support a dead weight of 150 tons—very close to the weight of a diesel locomotive. At present these wings are produced by hogging them out of solid slabs of aluminum.

The Air Force, with Northrop Aircraft and Aluminum Co. of America, says General Hefley, is working on a 16-foot wing section of exacting tolerances with the idea of casting it from AZ-92

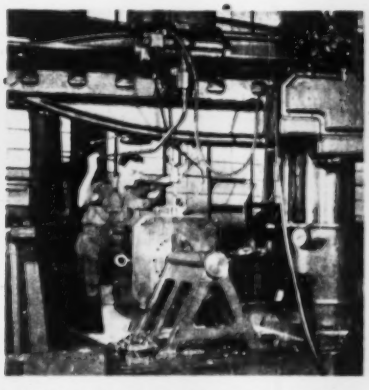
MAKE IT ALLOY

Versatile, dependable Chromium Steels are doing more different jobs today than ever before.

Constructional Alloy Steels—For greater strength and hardness in crankshafts, springs, transmission gears, countershaft pins, sway eliminator bars, through-hardened bearings and other critical parts, much of the alloy steel used by makers of automotive and farm equipment now contains chromium.



Stainless Steels—Every well-known type of stainless—both straight chromium grades and chromium-nickel grades — owes its resistance to heat and corrosion primarily to chromium.



Tool Steels—Whether for cutting, hot and cold forming, or die casting, whether the end product is a hand chisel or a forging die, nearly every present-day type of tool steel gets much of its strength and hardness from chromium.

The finest alloy steels are made with Vancoram ferro alloys.

VANADIUM CORPORATION OF AMERICA

420 Lexington Avenue, New York 17, N. Y.

DETROIT • CHICAGO • PITTSBURGH • CLEVELAND

Make it better...make it alloy

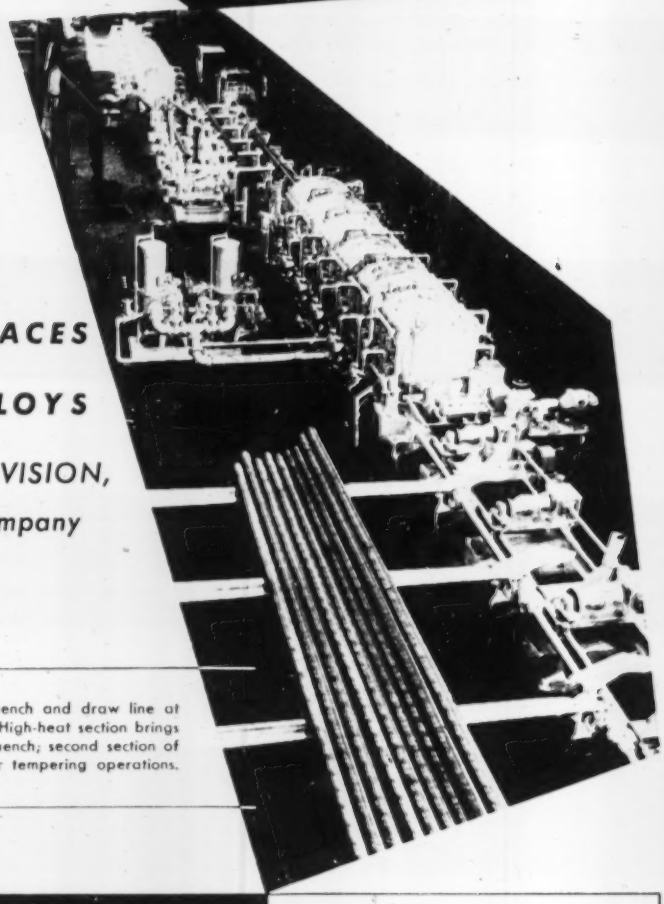
VANCORAM

Producers of alloys, metals and chemicals

GAS... THE MODERN FUEL FOR ALL INDUSTRY

GAS FIRED FURNACES CONSERVE CRITICAL ALLOYS

at SPANG-CHALFANT DIVISION, The National Supply Company



Continuous Gas-fired heat-treating quench and draw line at Spang-Chalfant plant, Ambridge, Pa. High-heat section brings tubing to temperature required for quench; second section of Gas-fired furnaces performs draw, or tempering operations.

- *In production of more than 80,000 tons of deep oil-well casing, critical alloys have been saved as follows:*
- *over 300,000 pounds molybdenum*
- *almost 1,500,000 pounds manganese*

PHYSICAL PROPERTIES FOR N-80 CASING	
MINIMUM YIELD STRENGTH	80,000 PSI.
MINIMUM ULT. TENSILE ST.	100,000 PSI.
MINIMUM ELONG. IN 2"	16%

ANALYSIS OF STEEL BEING USED	
CARBON	0.30 TO 0.40
MANGANESE	0.60 TO 0.90
PHOSPHOROUS	0.04 MAX
SULFUR	0.05 MAX
SILICON	0.25 MAX

For five years, plain carbon steel has been used at Spang-Chalfant Division of The National Supply Co. to make deep oil-well casing, grade N-80. Usually this casing is made with normalized-and-drawn high Mn-Moly steel. This new process gives the necessary characteristics to the casing by means of continuous Gas-fired heat-treating quench and draw line.

MORE AND MORE THE TREND IS TO GAS FOR INDUSTRIAL PROCESSING

Physical properties of the steel show it to be at least equal to the high Mn-Moly casing formerly made.

The heating units, designed by Selas Corporation of America, are composed of twelve radiant Gas-fired furnaces, divided into two sections of six furnaces each. First section brings pipe to quenching temperature of about 1600° F. Second section maintains temperatures of 1050 to 1250° F, depending upon the metallurgical structure of the pipe. Other equipment includes eight carburetors which deliver pre-mixed fuel under pressure to burners, automatic temperature control and recording devices, annular orifice quench head with pumping and filtering equipment.

Two rows of Gas burners on each side of these furnaces permit extremely fast heating. Ceramic burner tips can be replaced while the furnace is operating.

Gas is Industry's modern, efficient fuel. Wherever you need Heat, you need Gas. Get the facts from your Gas Company Representative.

AMERICAN GAS ASSOCIATION

420 LEXINGTON AVENUE • NEW YORK 17, NEW YORK

magnesium alloy. In the development stage are magnesium casting alloys that show possibilities for replacing stainless steel in many medium temperature applications.

Compressors Too—The Air Force is optimistic about casting the compressor stage of jet engines of a new zirconium-thorium-magnesium alloy which has shown promise of standing up under extremely high temperatures. Now in development stage is production of aluminum airframe castings capable of withstanding pressures of 70,000 psi.

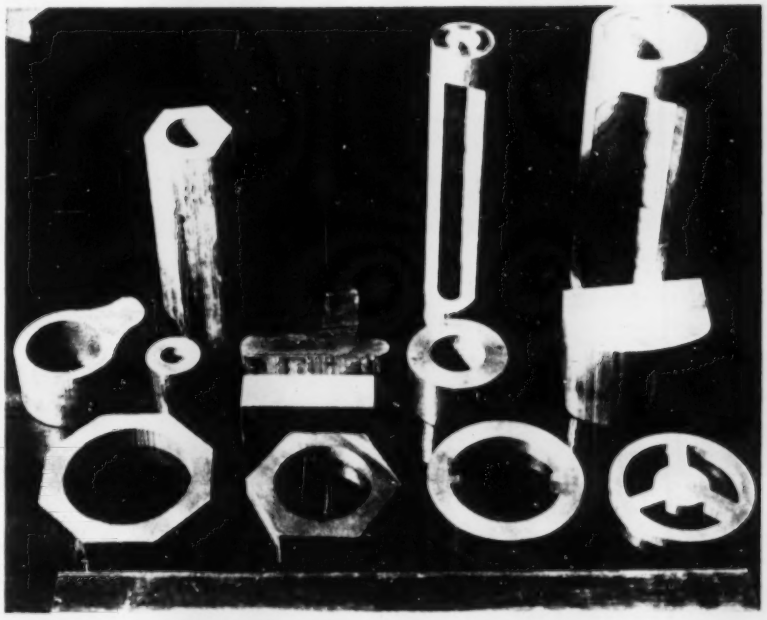
Drill Collar Reclaiming

DUAL welding machine used at C & W Machine Works, Great Bend, Kans., is reclaiming drill collars in about half the time formerly required. The added speed has made it unnecessary to purchase another jig or provide any additional space.

Two Linde Unionmelt type D welding heads mounted on a single carriage deposit a layer of metal on small-diameter cylindrical pieces, using submerged melt welding with double bead technique. Distance between the two electrodes is adjusted so after one revolution the bead from the second electrode is laid down beside that from the first. One complete layer of metal is deposited on the collar by making three passes with the welding machine.

No Overheating—According to the machine company, the installation's main advantage is increased speed. The two heads do the job twice as fast. In addition, electrode spacing setup avoids overheating the metal. The composition does not stick to the collar as it might if higher current and a single electrode were employed. Little difficulty is encountered in controlling the molten metal during the process.

The firm reports welding conditions are rather critical for a smooth job. Collars are rotated 1 rpm; speed of travel is 2⅝ inches per minute. These values are chosen so total number of beads will fit collar circumference exactly. Welding current applied to each head is 350 amp at 28 to 30 v.



Ability of the continuous cast process to produce shapes close to required contours results in large reduction in scrap losses and overall machining

Continuous Cast Copper on Tonnage Basis

Asarco plant produces over 500 tons of precision-cast rods, tubes and shapes every month. Brass mills and foundries are not competitors; they're the best customers

CONTINUOUS CASTING of copper alloy rod, tube and shapes has emerged from its 16-year old development cocoon as a million-pound-a-month operation at American Smelting & Refining Co., Barber, N. J.

Back in 1937 Asarco started work on continuous casting of phosphor-deoxidized copper billets with large cross section. In 1944 it began semi-pilot plant production of copper alloy products and in 1947 built the plant at Barber for commercial production. Six years and 50 million pounds of metal later, the company believes its products can compete with cast bronze bar stock and some types of individual sand, permanent-mold or centrifugal castings.

Best Customers — Continuous cast products compete only to a limited degree with brass mills and foundries. Actually these two are Asarcon's best customers. About 40 per cent of today's output goes to brass mills, 37½ per cent to foundry and special orders, and 22½ per cent to stock bushing alloys (83 copper, 7 tin, 7 lead, 3 zinc). In terms of products, 55 per cent is rod, 35 per cent tube and 10 per cent shapes, says J. L. Kimberly, continuous cast product's sales manager.

Company claims that its process is the only continuous casting method in commercial use producing copper-base alloy stock ready for machining or other fabricating operations. With about 18 patents existing and more on application most on the tapered graphite die, heat of the process the company is considering licensing in Britain, France and possibly Canada.

Close Tolerances—Close dimensional control, uniformity and nonporosity are top features of the process. Tolerances can be held to plus 0.004 and minus 0.006-inch on outside diameter, with tube concentricities within 1.5 per cent of

wall thickness. Size limits in rod, tube and shapes are from 7/16 to 5½-inch diameter in lengths to 20 feet.

In its three-floor plant at Barber, continuous casting starts with batch charge weighed and charged into Detroit rocking electric melting furnaces nose pour type with retractable electrodes. Company allows 85 per cent operation and 15 per cent downtime, though lines have run over 90 per cent for long periods.

Keep Silica Content Down

EXPERIENCE and research in efficient boiler operation at high pressures indicates the importance of maintaining silica contents in boiler salines at low levels, not over 5 parts per million.

In a paper presented at the American Power Conference in Chicago, on March 27, Martin E. Gilwood, research director at Permutit Co., New York, reported, "Higher silica levels result in solution of silica in the steam and subsequent deposition of silica on the turbine blades in the low pressure stages of the turbine."

Less Than 1 ppm—The author predicted in his paper "Mixed Bed vs Two-Step Demineralization of High Pressure Boiler Feedwater" that in the near future at pressures 1800 to 2400 psi and higher, maximum silica content permitted would be less than 1 ppm. He said, "Since make-up water is concentrated many times in the boiler, it has become common practice to specify that the treated make-up water should contain no more than 0.1 ppm of silica."

These and other conclusions were discussed in the presentation. Mixed bed and two-step demineralization by ion exchange are two processes that can be used to reduce the dissolved silica and solids to meet exacting specifications for high pressure boiler feedwater. Mr. Gilwood says the dissolved silica can be reduced to 0.01 ppm.

Future Installations—Summarizing, he told his audience, "Commercial development of high capacity ion exchange demineralizing apparatus now offers the possibility of producing economically, water low in both electrolyte content and dissolved silica. In the majority of future installations, low-cost demineralization by ion exchange will be used in place of expensive evaporators for the treatment of high pressure boiler feedwater."

Evaluates Alloying Data

Results of world-wide researches into the effects of adding various metals to iron and steel are now being readied for publication by Alloys of Iron Research, 29 W. 39th St., New York. *Aluminum in Iron and Steel*, by S. L. Case and K. R. Van Horn, will be released in June.

The new monograph series will provide metallurgists, engineers and other researchers with concise but comprehensive summaries of foreign and domestic data on the effects of selected metals on carbon steel, simple and complex alloy steels and cast iron. Four more volumes, to be published about six months apart, are in preparation. They will cover the effects on iron and steel of: Nickel; manganese, titanium; and columbium, zirconium, boron, tantalum and calcium.

DIFFERENTIAL PRODUCTS INCLUDE:

Locomotives, mine cars, mine supply cars, rock larries, mantrip cars, air dump cars, dumping devices and complete haulage systems.

Over a quarter century ago the first (and original) double-trunnion dump car was placed in service by Differential on the L & N. Sound engineering and careful workmanship were such that this car is still in service — still earning money for its owners.

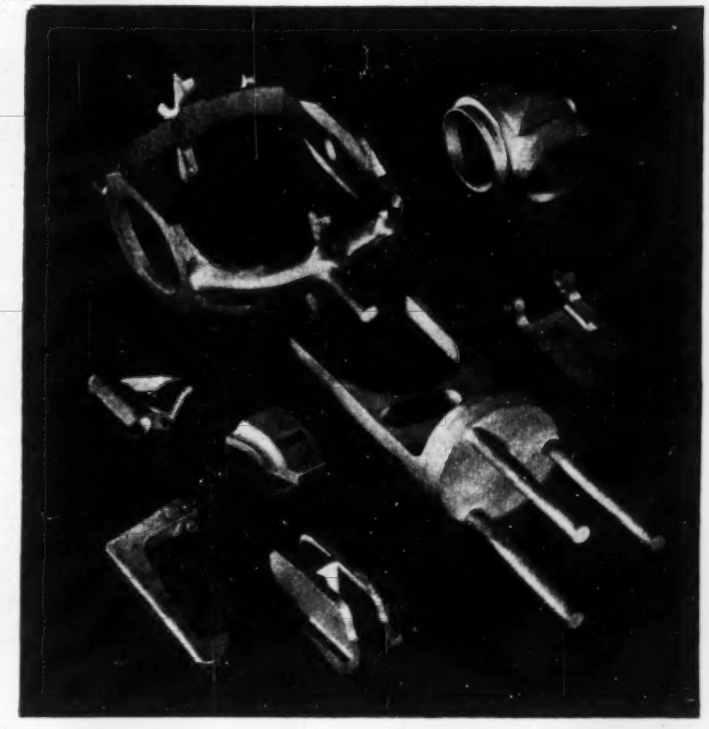
Such details as hardened, self-lubricating pins in door mechanisms, rolled steel weldments instead of castings (making repairs easier when repairs are necessary)—these are examples of details that put Differential in the lead more than 25 years ago — and keep it there!

Send for Bulletin 56 and get more information on this pioneering air dump car.

DIFFERENTIAL STEEL CAR COMPANY

FINDLAY, OHIO

SINCE 1915 — PIONEERS IN HAULAGE EQUIPMENT

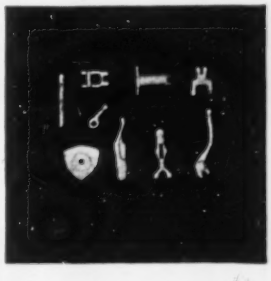


Accumet Precision Castings

for all industrial uses

With Accumet Precision Castings, Crucible has developed a process of producing precision investment castings in intricate designs with the smooth, satiny finish and closely-held dimensions characteristic of "lost wax" castings. Casting tolerances start at plus or minus 0.005" although under certain circumstances closer tolerances can be held. This relatively new metal forming process solves many difficult problems in design, tooling and production of metal components.

fuel injectors from precision castings



Fuel injectors and carburetors for aircraft are mechanisms containing a variety of peculiarly shaped component parts. The usual procedure is to use hardenable, chrome stainless steels, Types 416 and 416F, which are most adaptable to easy machining. However, to save costs in machining from bars, stocks and forgings, Crucible applied Accumet Precision Castings. The close size control and good surface finish of the castings eliminate many costly machining operations — saving manpower, machine time and tooling expense.

more information available on castings

Long a leader in the development of precision investment castings, Crucible offers you the services of an alert metallurgical staff to help you profitably apply these specialty steels to your operation. Write us for more detailed information. CRUCIBLE STEEL COMPANY OF AMERICA, General Sales and Operating Offices, Oliver Building, P. O. Box 88, Pittsburgh 30, Pennsylvania.

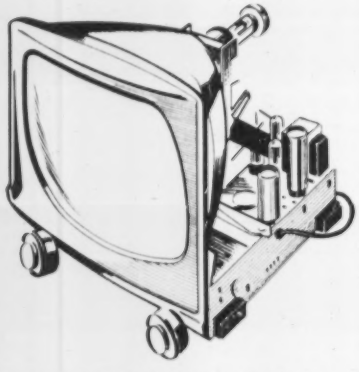
CRUCIBLE first name in special purpose steels

53 years of Fine steelmaking

PRECISION CASTINGS

REX HIGH SPEED • TOOL • STAINLESS • ALLOY • MACHINERY • SPECIAL PURPOSE STEELS

UNBRAKO SELF-LOCKING SOCKET SET SCREWS feature the following advantages: knurled cup point that won't work loose; accurate hex socket for nonslip, positive drive; fully formed threads—Class 3 fit; heat treated alloy steel for strength; standard sizes—# 4 to 1"—in a full range of lengths.



USE UNBRAKO SELF-LOCKING SOCKET SET SCREWS wherever ordinary cup point set screws are used . . . on radios, television sets and electronic equipment.

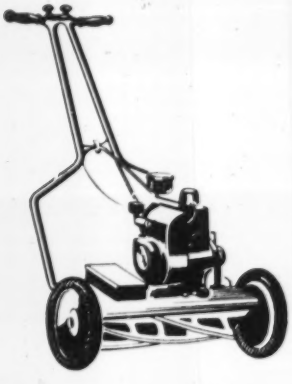
On refrigerators, washers, other household appliances

9 times out of 10 a standard UNBRAKO will do the job

A special socket screw may not be necessary, a standard UNBRAKO usually does the same job—much cheaper. Your local industrial distributor stocks Standards. He gives immediate attention to your requirements, and such extras as special delivery to your plant. Write for a copy of UNBRAKO Standards. SPS, Jenkintown 33, Pa.

UNBRAKO® SOCKET SCREW DIVISION

SPS
JENKINTOWN PENNSYLVANIA



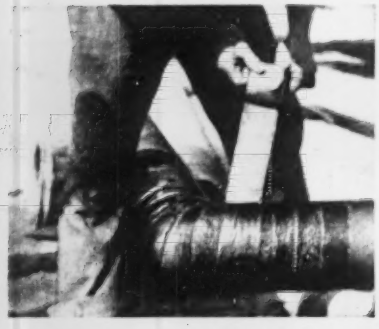
On power mowers, power saws and other power tools.

UNBRAKO Standards—as listed in the SPS Catalog—are stocked by leading industrial distributors everywhere.

TO COMBAT CORROSION

Specify TAPECOAT®

...the Original Coal Tar Tape Protection for Pipe, Pipe Joints, Couplings and Tanks



TAPECOAT is a coal tar coating with a tar-saturated, close-woven fabric as a carrier for easy application, providing a *natural* protection against corrosion.

TAPECOAT serves as both bond and protection...requires no foreign adhesive.

TAPECOAT resists moisture, acids, alkalis, soil stress, electrolysis, chemical fumes, fly ash, salt water, salt-laden air, barnacles and other severe corrosive and abrasive conditions.

TAPECOAT is clean to handle and easy to apply by spiral or "cigarette" wrapping with the use of a torch to bleed the coating for a bond to the surface. It cuts maintenance and replacement costs.

SIZED TO THE JOB

TAPECOAT comes in rolls of 2", 3", 4", 6", 18" and 24" widths to meet varying requirements.

TAPECOAT has proved its dependability for gas and oil companies, railroads, telephone companies, air lines, ship builders and operators, water and sewage works, chemical and industrial plants, engineers and contractors... in combating corrosion both underground and above ground.

PROVED IN SERVICE SINCE 1941

Write for descriptive brochure and prices

The* TAPECOAT *Company

Originators of Coal Tar Tape Protection

1543 Lyons Street, Evanston, Illinois

Wanted: Finger-Tip Facts

Punched card accounting proves economical in a small plant if tailored to fit job size

By RICHARD G. BRUMBY
President
Brumby Metals Inc.
Decatur, Ga.

DETAILED FACTS, a principal ingredient in management decisions, are available readily to executives in charge of large business. It is the administration of a young and growing enterprise that frequently lacks means for obtaining all the detail it needs.

Employment of large clerical staffs for detail work obviously is too costly. Generally dismissed on the same count is a sound punched-card accounting setup. So the average small operator impedes his own progress by managing without adequate controls.

Considering our own position with respect to accounting controls, we found a survey unnecessary to point up a glaring need for getting more facts faster. We wanted better sales analysis, closer control over labor and indirect costs, plus better office procedure to meet increasing production demands.

Intricacies Multiply — Brumby Metals Inc. started business after World War II as a metal stamper turning out a variety of products. Bearing out our small plant classification, there were only three people in the office and 15 or 20 plant employees. But defense subcontracts pushed production curves upward, creating a need for thorough checks all down the line from materials orders to payroll. The work force grew to about 150 in the plant, plus 21 in the office, including engineering and administration.

Our varied list of products mean cost operations follow a complex pattern. Some products are assemblies of several fabricated parts; others are metal stampings. Still others involve machining.

Shaping a Solution—These were the elements of our accounting problem: A need for records to cover a variety of materials, processes and products as well as facts to indicate sales and promotion effectiveness. The solution turned out to be as fundamental as a rubber stamp—we installed a punched-card accounting system tailored to fit our small operation.

The punched-card equipment has operated since August, 1950, beginning with a Remington Rand model 2 Numeric. At the same time we installed that company's filing cabinets for our tabulating cards, plus their model 98 printing calculator and an electric typewriter with carbon ribbon attachment. Heart of the installation is the Synchromatic accounting machine synchronized with the tabulating card punch.

Production of cards is almost a cost-free operation. By-product reports further justify this comparatively negligible cost item.

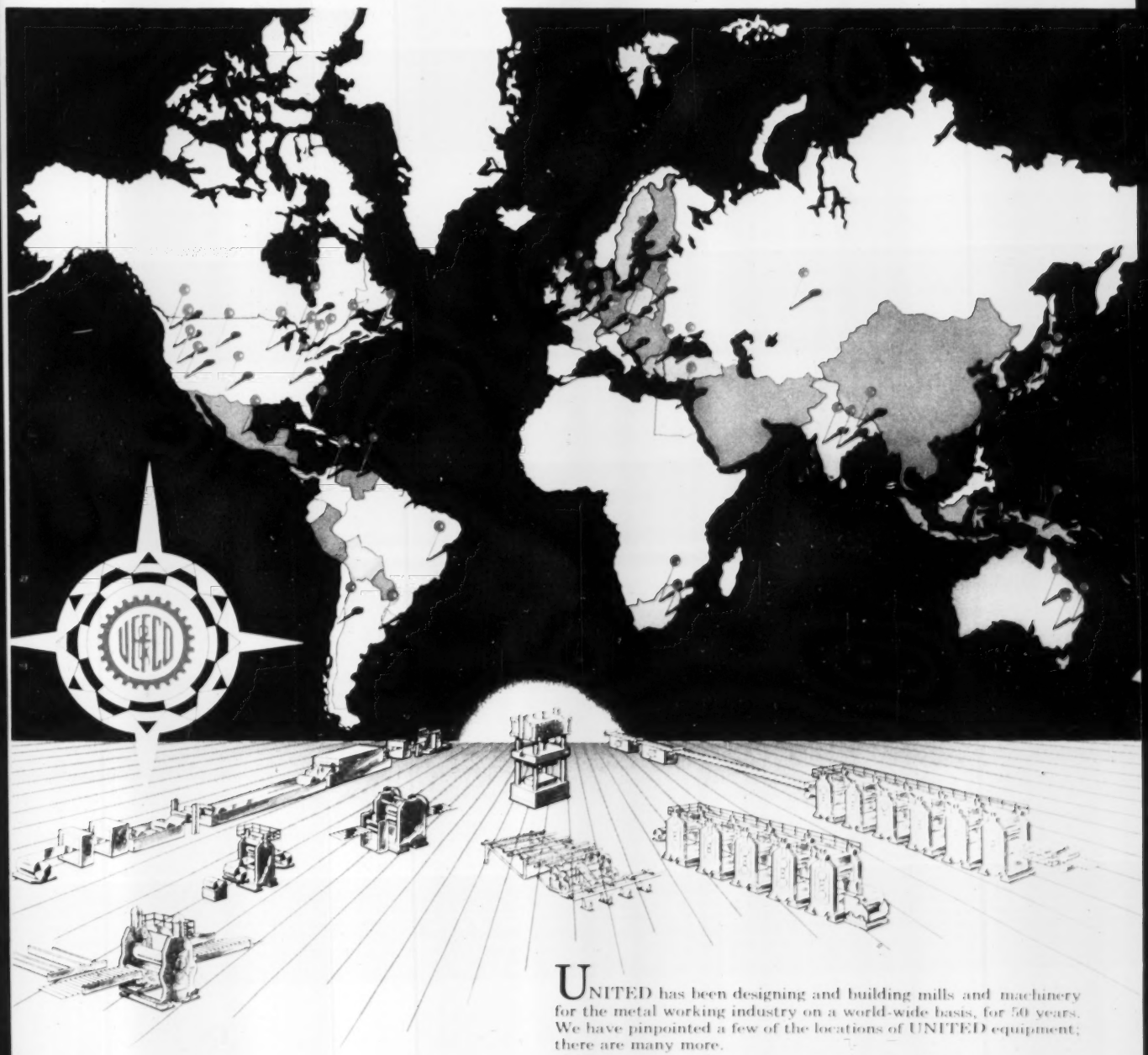
HEART OF THE SYSTEM
. . . *synchronized tabulating*

Limitations, Advantages—While lack of alphabetic information poses a limitation in use of our present equipment, the setup can handle the job in thorough fashion until we grow even more. We code such items as customer and product names numerically. Within 45 columns on the accounts receivable card, we record number of units, coded description of item, unit price, terms and discount rate, extension of unit price, coded customer name and salesman. Most of this information also is placed on the sales card.

Payroll also has been applied to this equipment. For hourly-rated payroll, a labor cost distribution is summarized daily and weekly. Separate cards are punched for gross

UNITED

CAN SERVE YOU . . . NO MATTER WHERE IN THE WORLD YOU ARE



UNITED has been designing and building mills and machinery for the metal working industry on a world-wide basis, for 50 years. We have pinpointed a few of the locations of UNITED equipment; there are many more.

Inquiries concerning modern rolling mills and metal processing equipment are solicited from mill operators everywhere; for no matter where in the world you are — at home or abroad — UNITED can serve you.

Write or wire us direct. Cable address: UNITED PITTSBURGH.

Designers and Builders of Ferrous and Non Ferrous Rolling Mills, Mill Rolls, Auxiliary Mill and Processing Equipment, Presses and other heavy machinery. Manufacturers of Iron, Nodular Iron and Steel Castings and Weldments.

UNITED

ENGINEERING AND FOUNDRY COMPANY

Pittsburgh, Pennsylvania

Plants at

PITTSBURGH • VANDERGRIFT • NEW CASTLE
YOUNGSTOWN • CANTON

SUBSIDIARIES

Adamson United Company, Akron, Ohio
Lobdell United Company, Wilmington, Delaware
Stedman Foundry and Machine Company, Inc., Aurora, Indiana

TRADE MARK

C-O-TWO

REG U.S. PAT. OFF.

FIRE EXTINGUISHERS

give fast, positive fire protection

● Top quality backed by experienced engineering results in operating superiority at all times with the world famous C-O-TWO Squeez-Grip Carbon Dioxide Type Fire Extinguishers as well as the newer C-O-TWO Dry Chemical Type Fire Extinguishers. Furthermore, modern manufacturing facilities and extensive field testing, together with approvals such as the Underwriters' Laboratories, Inc., Factory Mutual Laboratories and Government Bureaus assure you of fast, positive action the instant fire strikes.

With C-O-TWO Squeez-Grip Carbon Dioxide Type Fire Extinguishers the penetrating carbon dioxide is a clean, dry, non-damaging, non-conducting inert gas . . . smothers fire in seconds, leaves no after fire mess . . . highly effective on flammable liquid and electrical fires, as well as some surface fires involving ordinary combustible materials. The C-O-TWO Squeez-Grip Valve is the greatest single contribution to the releasing of carbon dioxide for first aid fire fighting . . . just squeeze lever to open . . . release to close.

Convenient 2½, 5, 10, 15 and 20 pound hand sizes . . . discharge horn non-conducting, shatterproof construction. Also, convenient 50, 75 and 100 pound wheeled sizes . . . available with sturdy, wide-faced wheels either with or without rubber tires, as well as available with or without discharge hose and horn protection cover.

With C-O-TWO Dry Chemical Type Fire Extinguishers the heat-shielding dry chemical is a non-conducting, non-abrasive, non-toxic, finely pulverized powder compound . . . blankets fire instantly . . . exceedingly effective on flammable liquid, gas and electrical fires, as well as surface fires involving ordinary combustible materials. The exclusive inverting design renders constant free flowing dry chemical, assuring faster, more effective and complete discharge.

Convenient 4, 20 and 30 pound hand sizes . . . no syphon tubes or valves within the cylinder to become clogged or inoperative . . . discharge hose and squeeze type discharge nozzle remain empty until actuation takes place . . . one piece removable top assembly. Also, convenient 150 pound wheeled size . . . sturdy, wide-faced wheels . . . discharge hose and two position discharge nozzle having soft or solid stream fully enclosed in protection casing . . . footrail and dual bar handle provide easy inverting.

Act now for complete free information on these fast, positive fire extinguishers. Remember fire doesn't wait . . . get the facts today!

C-O-TWO

MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

Squeez-Grip Carbon Dioxide Type Fire Extinguishers
Dry Chemical Type Fire Extinguishers
Built-In High Pressure and Low Pressure Carbon Dioxide Type Fire Extinguishing Systems
Built-In Smoke and Heat Fire Detecting Systems

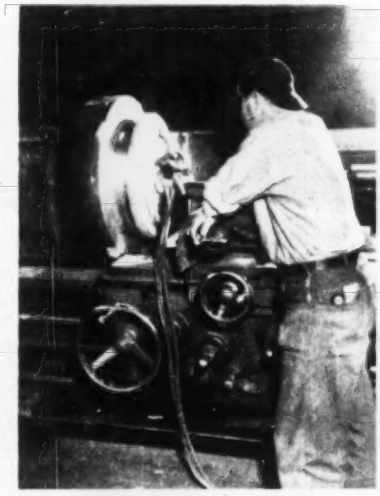
C-O-TWO FIRE EQUIPMENT COMPANY

NEWARK 1 • NEW JERSEY

C-O-TWO FIRE EQUIPMENT OF CANADA, LTD. • TORONTO 8 • ONTARIO

Sales and Service in the Principal Cities of United States and Canada

AFFILIATED WITH PYRENE MANUFACTURING COMPANY



Metallizing Repair

Turbine engine diaphragms are repaired by metallizing in this Eastern shipyard. Sealing edge, 25 inches diameter and 1 inch wide, is undercut 0.050-inch, threaded and prepared with equipment supplied by Metallizing Engineering Co. Inc., New York. After sandblasting, diaphragms are metallized 0.035 to 0.040-inch over original diameter and finish machined

pay, FICA and withholding tax deductions and a miscellaneous card for other deductions. With these cards filed in rotation, we run a payroll check and earning record for each employee, then type names after checks are run.

Controlled Inventory — Another advantage is found in recording perpetual inventory on punched-card equipment. We control about 1200 items from raw material and work in process through finished goods. Requisitions and receiving reports provide punching media for this application. Part of the by-product reports produce facts for controlling purchasing.

Manual Outlines Die Jobs

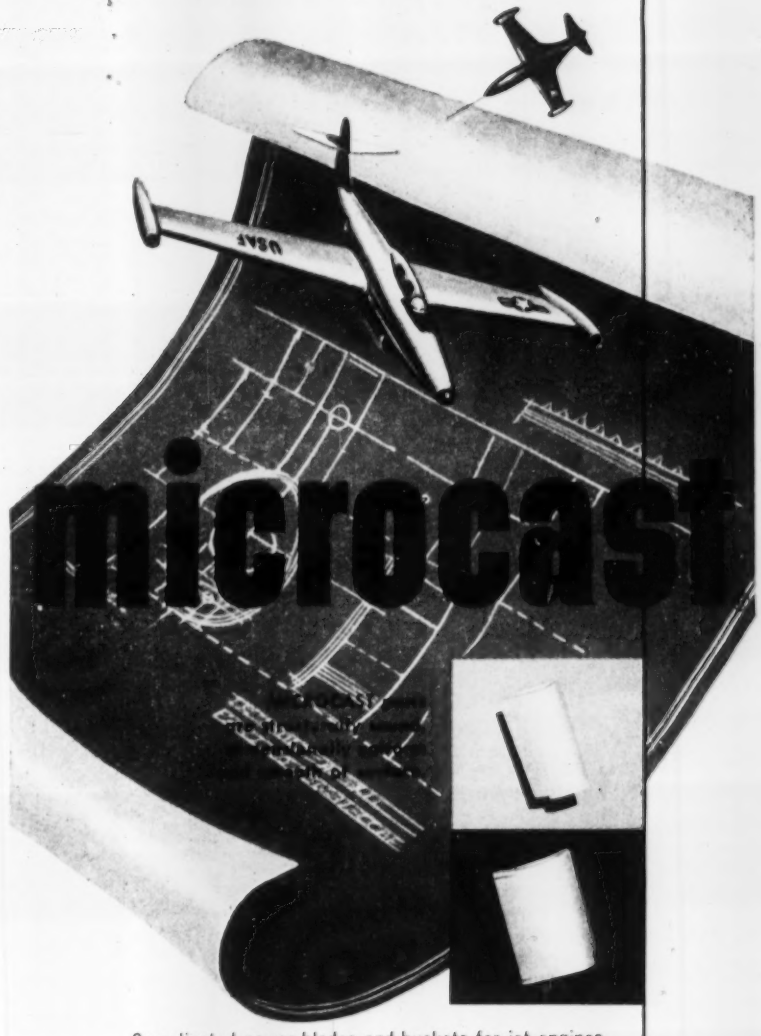
A new header die manual that tells how to drill, assemble and finish series HN rough-colored header die nibs employing grade 190 tungsten carbide is announced by Carboloy Department, General Electric Co., Detroit. Besides outlining applications of grade 190 tungsten carbide, the publication includes information on nib standards, heading die design, shop equipment and other data.

the Process that Helped to

MICROCAST PRECISION CASTINGS PROCESS

SPEED UP

JET ENGINE PRODUCTION



Complicated power blades and buckets for jet engines require the use of high-melting-point alloys that are slow and costly to produce by ordinary methods of manufacturing. The Microcast Process of investment casting produces these parts for use as cast, reducing machining and grinding operations to an absolute minimum. This process is particularly well suited to similar applications requiring the use of high-temperature alloys. Let us show you how MICROCAST parts can fit into your product's design.

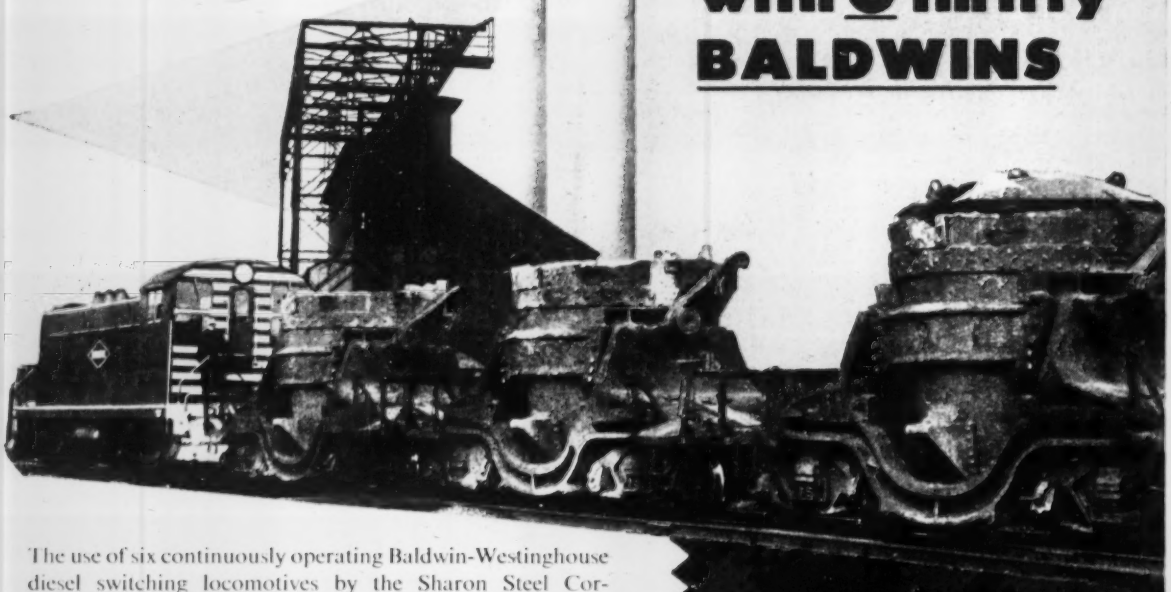
Write for booklet and information on new color movie

MICROCAST DIVISION

austenal laboratories, inc.

224 East 39th St., New York 16, New York
7001 South Chicago Ave., Chicago 37, Ill.

SHARONSTEEL reduces operating costs with 6 thrifty BALDWINS



The use of six continuously operating Baldwin-Westinghouse diesel switching locomotives by the Sharon Steel Corporation at their Roemer Works reduced operating costs. Here is Sharon Steel's report:

- "We have found that operating costs are lower with the Baldwin-Westinghouse diesels than they were with steam locomotives.

"There is a reduction in operating delay at each turn change time, because refueling and resanding is done only once every three days. Formerly, we took on water, coal, sand and cleaned the fires at each turn change.

"The installation of diesel locomotives has been a large step forward in our air purification program. The elimination of smoke and dirt produced by the steam locomotives entering buildings has greatly improved working conditions. Another improved feature over steam locomotives is the ability of the Baldwin diesel to rapidly generate more air pressure for our air dumped cars."

If *you* are interested in cutting *your* operating costs, write now for Bulletin DMH-300, to Dept. 1646, Baldwin-Lima-Hamilton Corporation, Philadelphia 42, Pa.

BALDWIN BLH LIMA-HAMILTON

BALDWIN - LIMA - HAMILTON

INDUSTRIAL LOCOMOTIVES

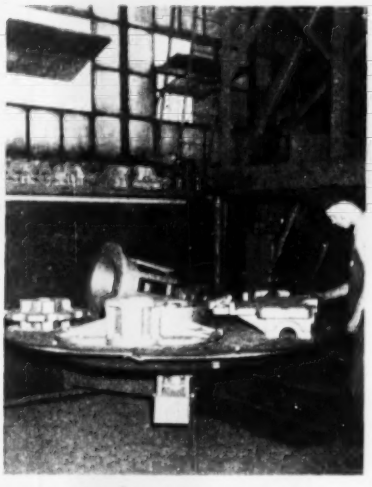
.. they're thrifty!

Two-Stage Blast Job

Abrasive cleaner halves manpower, doubles output. Casting surface improves

AIRLESS BLASTING for cleaning heavy steel castings in two stages of condition is reducing overall cleaning costs 50 per cent at Electric Steel Castings Co., Indianapolis. About 200 tons of castings a month, weighing up to 3000 pounds each, are cleaned in American Wheelabrator & Equipment Co.'s swing table cabinet, both in the green stage and after annealing. This makes total cleaning work total 400 tons.

Machine has a rotating table 86 inches diameter mounted on the cabinet door for easy loading and unloading. When the door opens, the table automatically comes out into the room, then retracts as the door is closed. In the cabinet, the table rotates castings under a metallic abrasive blast from three rotating bladed wheels mounted in roof and walls. Because a considerable portion of production involves sprockets and wheels, one abrasive throwing wheel is positioned especially to clean cored hubs.



HEAVY CASTING CLEANER
about 200 tons per month

One Shift Job—Cleaning time for an average load of green castings with heavy sand accumulation is reported at 5 minutes. According to the company, annealed castings are descaled in 2 minutes. Entire cleaning job, on both green and annealed work, is handled by one operator and a helper in one 8-hour shift. The casting firm says this is a substantial improvement over its old method, which required two men on each of two shifts.

Another advantage cited by the company is improved surface cleanliness. They report increased grinding wheel life because of green castings' sand-free condition. Inspection is rapid and thorough, with defects immediately apparent.

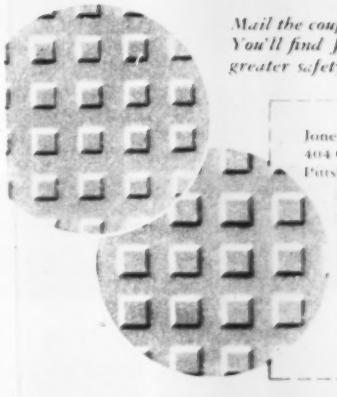
Abrasive Re-used—Metallic abrasive in the machine is used over and over. After striking the castings, abrasives particles fall into a pit beside the machine, then are moved by a screw conveyor into an elevator and back to the top of the machine. There good abrasive is separated from sand and scale, than fed into wheels for reuse. Contaminants are piped off to a dust collector which also ventilates the blasting compartment.

THAT SETTLES IT-
WE INSTALL
J&L
JAL-TREAD
FLOOR PLATES

The safety of your employees and the public is good enough reason to install walking surfaces of slip-resistant J&L Jal-Tread floor plate.

But here are some other important advantages you'll get when you specify Jal-Tread, the only true checker-board floor plate.

- Reduced worker fatigue from feet rocking on uneven surfaces.
- No wheel shimmy in hand industrial trucks.
- Neat appearance . . . easy draining and sweeping in any direction.
- Easy fabrication—square design allows cutting without shearing through raised cleats . . . welding joint of uniform thickness.
- Easy cold-forming on standard equipment.



Mail the coupon for more information today. You'll find J&L Jal-Tread will pay off in greater safety . . . lower maintenance costs.

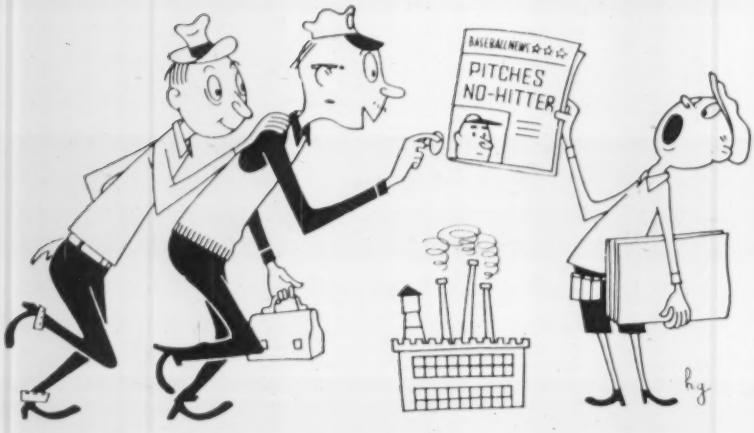
J&L STEEL

Jones & Laughlin Steel Corporation
404 Gateway Center
Pittsburgh 30, Pa.

Please send me your free booklet on J&L Jal-Tread.
Please have your representative call.

Name
Company
Address

Control gives top results in grinding too!



SIMONDS ABRASIVE CO.

Grinding Wheels

Take Simonds Wheels, for instance! They're quality-controlled for top performance. And this is *complete* quality control. It begins with the raw materials used in the wheels. It continues throughout the screening, mixing, pressing, firing and finishing operations. It governs the minute, but essential variations in the relationship between bonds and cutting particles. It is backed by research and maintained by modern facilities to give you consistently superior results on roughing, finishing, cutting-off, polishing and sharpening. Free data book gives details on complete line. Write for it, and name of your Simonds distributor.

SIMONDS ABRASIVE CO., PHILADELPHIA 37, PA. BRANCH WAREHOUSES: CHICAGO, DETROIT, BOSTON

DISTRIBUTORS IN PRINCIPAL CITIES

Division of Simonds Saw and Steel Co., Fitchburg, Mass. Other Simonds Companies: Simonds Steel Mills, Lockport, N.Y., Simonds Canada Saw Co., Ltd., Montreal, Que. and Simonds Canada Abrasive Co., Ltd., Arvida, Que.

Firming Production Bogs

Four-pronged analysis picks out production soft spots, spreads materials properly

SIMPLE, fast production line analysis method employed by the armed forces is functioning effectively to spot bottlenecks and keep schedules up to pitch.

The method has consistently fingered weak spots that required attention in some 31 plants producing aircraft, amphibious tanks, guided missiles and other military end-items. It proves particularly valuable in picking out future trouble spots, so early preventive action can be taken.

According to Office of Navy Materials, one of the sponsoring units, the system was developed at Goodyear Aircraft Corp. prior to World War II when that company was working on Bureau of Aeronautics contracts. A brief history of the efficiency-plus approach shows that its founder, a Goodyear employee named George Fouch, was shipped to Washington at the war's outset, equipped with a Navy commission and ordered to apply the method to other contractors. When the Korean war started, the project was reactivated and spread with good effect to the Army and Air Force.

Graphic Analysis — Naval Materials office says the graphic production analysis—proper name for the method—has four basic functions: 1. It isolates and identifies materials, components and parts in short supply early in the production cycle. 2. It isolates government-supplied items in excess of production requirements so they can be transferred to other Navy contractors needing similar items. 3. It increases accuracy of delivery estimates. 4. It provides a guide to the contractor's performance, status of government-furnished material allocations and serves as a basis for terminating production in an economical and informed manner.

Five-Man Teams — The production analysis is applied by five-man teams that go directly into the plant where the method is to be used. After a conference with plant production executives to

now

an improved E-6010

the new MUREX® type R

Welders like it!

Murex now gives you the first real improvement in Type E-6010 electrodes in many years.

A completely redesigned electrode, the new Murex Type R welds with less spatter—digs deep without undercutting—does not spear—takes higher currents with no sacrifice in performance—has outstandingly uniform arc action.

Physical properties too, are excellent—more than you'll ever need in E-6010 applications.

Ask for detailed data—request a demonstration—see how this new, improved TYPE R can give you better, faster welding—how easy it is to use.

DETINNING
THERMIT WELDING
METALS & ALLOYS
ARC WELDING—Materials and Equipment
CHEMICALS and ANODES for Electrotinning
CERAMIC OPACIFIERS
STABILIZERS for Plastics
TIN, ANTIMONY and ZIRCONIUM CHEMICALS

METAL and THERMIT CORPORATION

100 East 42nd Street • New York 17, N. Y.

MUREX ELECTRODES • ARC WELDERS • ACCESSORIES

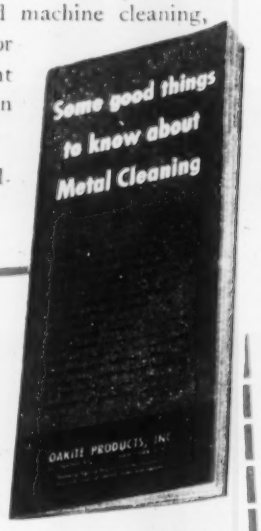
HOW DO YOU PUT
A HEAVY PHOSPHATE COATING
ON 90 MM. SHELLS?

HOW CAN WE GET
BETTER ELECTROCLEANING
AT LOWER COST?

These are two of the simplest questions on metal-cleaning we answer every day. Hundreds of tougher ones are asked of the 180 Oakite Technical Service Representatives throughout the country, or come to us through the mail.

We thrive on questions about tank and machine cleaning, electrocleaning, pickling, preparation for painting, paint stripping, steam-detergent cleaning, barrel finishing, rust prevention and related subjects.

There's space below for asking your metal-cleaning question.



OAKITE PRODUCTS, INC.
34E Rector St., New York 6, N. Y.

Tell me (without obligation) about Oakite methods for removing the following soils:

_____

_____

_____

_____

☐ ALSO send me a FREE copy of your booklet "*Some good things to know about Metal Cleaning.*"

Name _____

Company _____

Address _____

Technical Service Representatives Located in Principal Cities of United States and Canada

SPECIALIZED INDUSTRIAL CLEANING
OAKITE
MATERIALS · METHODS · SERVICE

clarify the team's activities the men fan out to collect data on specific phases of operation. These include assembly line layout and content, processes, lead times, stock positions, and quantities of purchased, subcontracted, plant-manufactured and government-manufactured materials and assemblies. Once the system is established, it can be kept up to date by one or two men making summary reports.

Data are then converted into graphic displays that show three separate but interrelated diagrams on a single chart depicting essential facts that bear on production. One diagram shows planned, estimated and actual deliveries; another is a schematic of the main assembly line with lead times and assembly positions of selected materials and components superimposed. The third diagram is a bar chart that shows availability of materials and components that control quantity and production rate.

Job Shops Next—The production line analysis can be applied in any plant that has a production-line manufacturing system. However, the technique has never been used in job shops.

That this dividing line may disappear soon is suggested by the Navy's report on production analysis work proceeding now in an important job shop program.

Glass Coating Cuts Corrosion

A glass instead of a silver lining is proving the answer to cloudy corrosion and stainless steel conservation problems in several Navy applications. Pfaulder Co., Rochester, N. Y., says it is providing glass coatings, inside and out, for steel and alloy equipment bound for service on snorkel submarines, PT boats and other fighting craft.

The special-formula glass is sprayed on and fused to steel and other metals under extremely high temperatures. The firm reports it is more resistant to water and acids than stainless steel. The technique is used on submarine exhaust piping and for mufflers on PT's and Coast Guard craft. According to the company, the glass will not crack or spread and can be damaged only at point of considerable impact.

MEN OF INDUSTRY

(*Continued from Page 92*)

president to succeed **William V. McMenimen,** elected vice chairman of the board.

New directors of **Babcock & Wilcox Co.,** New York, are **Edward L. Cochrane, J. H. King** and **Luke E. Sawyer.** Mr. Cochrane is dean of engineering, Massachusetts Institute of Technology, Mr. King is vice president in charge of the company's boiler division, and Mr. Sawyer is vice president in charge of the tubular products division.

Trumbull Electric Department, General Electric Co., Plainville, Conn., named **J. E. Kerby** manager of its newly created west central district with headquarters in Kansas City; **A. P. McGraw** manager, southwest district, Houston; and **J. E. Van Effen** manager of the new Cleveland district with headquarters in Columbus, O.

In the Asbestos Products Division, **National Gypsum Co.,** Millington, N. J., **Patrick H. Ryan** was appointed sales manager and **William U. Townsend** commodity manager.

James F. Atkins is division comptroller, Texas Division, **Bell Aircraft Corp.,** at Ft. Worth, Tex.

C. I. Burdick joined **Willys-Overland Motors Inc.,** Toledo, O., as director of industrial engineering. He was a staff engineer with Dana Corp.

Laclede Arch Co., St. Louis, appointed **Francis L. Parrick** design engineer.

Joseph R. Zelenka, vice president-treasurer, Thatcher Furnace Co., joined **Pyrene Mfg. Co.,** Newark, N. J., as comptroller succeeding **Thomas A. Mulvaney,** retired.

C. P. Cryer of Lansdowne, Pa., was appointed eastern territory representative for **Lintern Corp.**

George D. Klick was made advertising manager, **Lebanon Steel Foundry,** Lebanon, Pa.

Mercer Tube & Mfg. Co. and **Sawhill Mfg. Co.,** Sharon, Pa., appointed **J. E. McFate** district sales manager for their Michigan territory, with office in the Buhl building, Detroit.

MAJ. LOUIS G. BURNS
. . . Chandler-Evans chief pump engineer

Chandler-Evans Division, Niles-Bement-Pond Co., West Hartford, Conn., appointed **Maj. Louis G. Burns** chief pump engineer. Following service with the Air Force he returned in 1946 to Pesco Products Division, Borg-Warner Corp., as chief research engineer. In 1950 he joined Aero Supply Mfg. Co. Inc. as director of engineering. He was recalled to active duty in 1951, assigned to the Air Research & Development Command at Wright Patterson Air Force Base. During this period he was active in research and development of advanced fuel systems, pumps and components for jet aircraft.

Richard N. Mathews was elected vice president, **Kewanee-Ross of Canada Ltd.,** and placed in charge of its new general offices at 57 Bloor St. W., Toronto.

A. C. Brown Jr., regional manager, **Air Reduction Sales Co.,** New York, was appointed general sales manager there. He is succeeded by **J. H. Keeney** who in turn is succeeded as administrative assistant in Pittsburgh by **J. H. Hart. R. A. Jamieson** becomes Detroit district manager.

H. J. Simmons was appointed manager, Richmond, Calif., packaging branch of **Hall-Scott Motors,** subsidiary of ACF-Brill Motors Co.

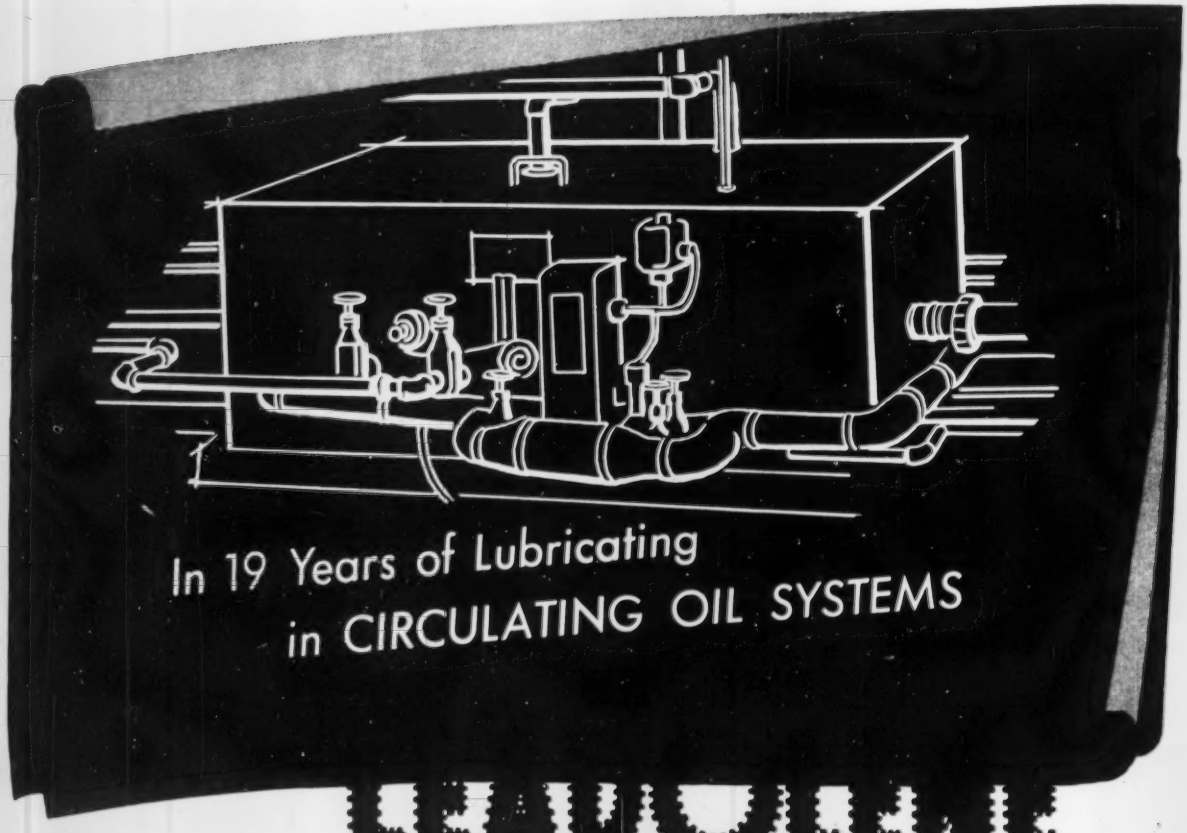
District sales managers assigned to **Iron Fireman Mfg. Co.'s** northwest region include: **Arthur Kuhn,** Dubuque, Iowa; **Fletcher Poole,** Sioux Falls, S. Dak.; and **Robert S. Bean,**

BIN
STUCK LATELY?

The CLEVELAND vibrator will move ore, sinter, flue dust and other materials through bins, hoppers, chutes, swinging spouts, car dumpers and other handling devices. Positively eliminates arching, bridging and sticking economically and quickly. Speeds production. Saves your bins.

Save with air!
WRITE FOR CATALOG 105 TODAY.

THE CLEVELAND VIBRATOR COMPANY
2780 Clinton Ave. • Cleveland 13, Ohio



In 19 Years of Lubricating
in CIRCULATING OIL SYSTEMS

LEADOLENE

"LEADOLENE . . . the "L P Lubricant" (Indestructible pH-ilm) . . . for Industrial Needs

NEVER HAS BEEN REPLACED BECAUSE OF BECOMING ACID OR SLUDGING . . .

Among our most satisfied customers are those who use LEADOLENE in circulating oil systems. Since our laboratory checks a sample from each system every month, we know that the efficiency of none of them has been reduced because of becoming acid or sludging.

Since water does not affect the efficiency of LEADOLENE, costly centrifuging and other purifying methods are not necessary. This lubricant, with its "Indestructible pH-ilm Strength," has served for years in applications where the water content frequently reaches 35% and seldom is less than 10%. Practically all companies which use LEADOLENE in circulating systems adopted the product after some other lubricant failed.

Assure yourself of low lubricating costs and vastly increased gear and bearing life . . . by standardizing on Brooks LEADOLENE for circulating oil systems.

WRITE FOR a 20-page brochure, "The Brooks Oil Story" . . . or for consultation with a Brooks Engineer.

CASE HISTORY NO. 187

Since 1934 LEADOLENE has been used in a certain system lubricating the finishing stand pinions of a hot strip mill. Despite severe water conditions, the original lubricant still is in use after 19 years of service.

THE BROOKS OIL CO.

Since 1876

Executive Offices and Plant . . . . . Cleveland, Ohio
Executive Sales Offices . . . . . Pittsburgh, Pa.
Canadian Offices and Plant . . . . . Hamilton, Ontario
Cuban Office . . . . . Santiago de Cuba

Warehouses in Principal Cities

Minneapolis. **B. B. Magee** transfers to Minneapolis as western sales manager, administrative head for the Northwest and Pacific Coast regions.

Henry T. Bodman was elected to the board of **Detroit Steel Products Co.**, Detroit, as a replacement for the late **Walter S. McLucas.**

Guy V. Bennett joins **T. C. Jarrett Co.**, Denver, in sales and engineering of C. I. Hayes Inc. line of heat treating furnaces and related equipment.

H. J. Service was made manufacturing manager for the accessory turbine section of **General Electric Co.'s** aircraft gas turbine division, Lynn, Mass.

Herbert F. Boettler of St. Louis succeeds **William P. Hemphill,** retired, on the board of **Laclede-Christy Co.**, St. Louis.

Ernest W. Shell, treasurer of **Algoma Steel Corp.**, Sault Ste. Marie, Ont., since 1917, has retired. He is succeeded by **W. E. Morley,** formerly assistant treasurer.

William P. Gallant fills the new position of human relations director at **Cross Co.**, Detroit.

Robert S. Sloan and **E. E. Morton** will operate out of San Francisco as, respectively, manager of consumer products and manager of apparatus and supplies for **Westinghouse Electric Supply Co.'s** northern California district.

James P. Creech was appointed southwest regional representative for **Consolidated Industries Inc.,** located at Dallas.

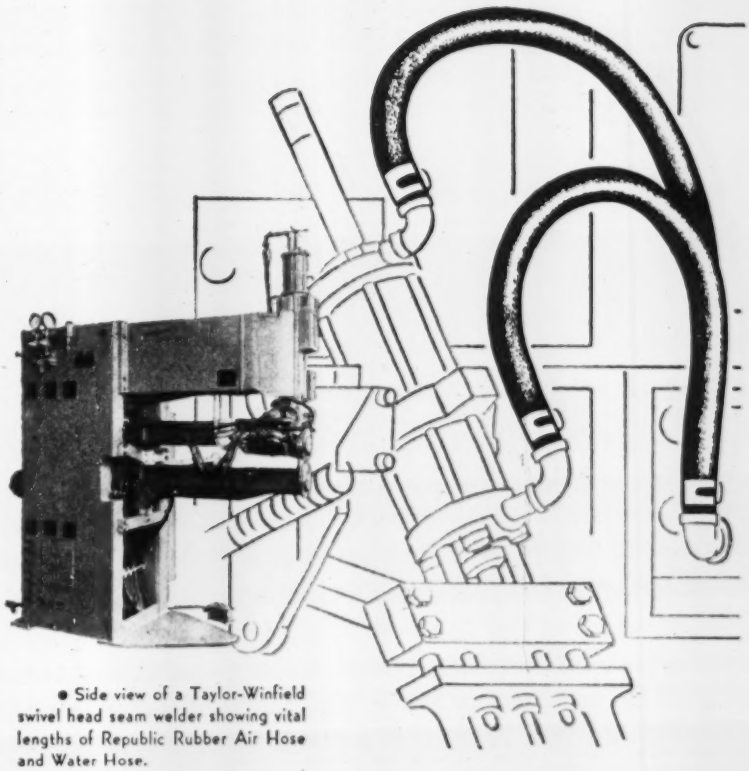
Robert E. Nixon joins **Adamas Carbide Corp.**, Harrison, N. J., as service engineer. He formerly was at Union Twist Drill Co.

Harry A. Neff, Ft. Wayne, was named district sales representative for **C. A. Norgren Co.** in Indiana, and **W. H. Nash** in Michigan, with headquarters in Detroit.

A. C. Lawson was appointed secretary, **Canadian Car & Foundry Co., Ltd.**, Toronto, Ont. He had been assistant comptroller.

Appointed assistant engineers to **Allis-Chalmers Mfg. Co.'s** plant en-

Please turn to Page 175



● Side view of a Taylor-Winfield swivel head seam welder showing vital lengths of Republic Rubber Air Hose and Water Hose.

Rubbernecks

...for swivel head resistance welders

● Lack of backbone pays off big in the resistance welding field. Here, as in many industries, it's flexibility that counts, and in this department Republic Air Hose and Water Hose are real rubbernecks.

Despite constant flexing, stretching, cramping and sudden pressure changes, measured amounts of air, water and coolants get through the smooth inner tubes of Republic Hose.

And the delivery keeps up longer . . . long after ordinary hose has become exhausted!

Republic Hose is built with tougher covers . . . has specially braided carcasses made of finer twisted cords, specially treated to stand up better on the job. And Republic Hose costs less to use.

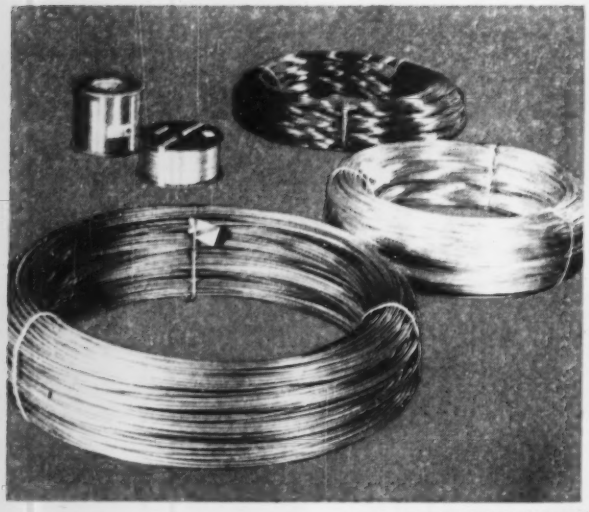
Your local Republic Distributor is an expert in the many applications of industrial rubber products. He can help you to select the right type of hose for your operation. Yes, for any operation in any industry. Why not check with him today? Or write direct for information. Remember, Republic Rubber has been the specialist in the manufacture of industrial rubber products for nearly half a century.

REPUBLIC RUBBER DIVISION

LEE RUBBER & TIRE CORPORATION, YOUNGSTOWN 1, OHIO

INDUSTRIAL RUBBER PRODUCTS

KAISER ALUMINUM PRODUCTS

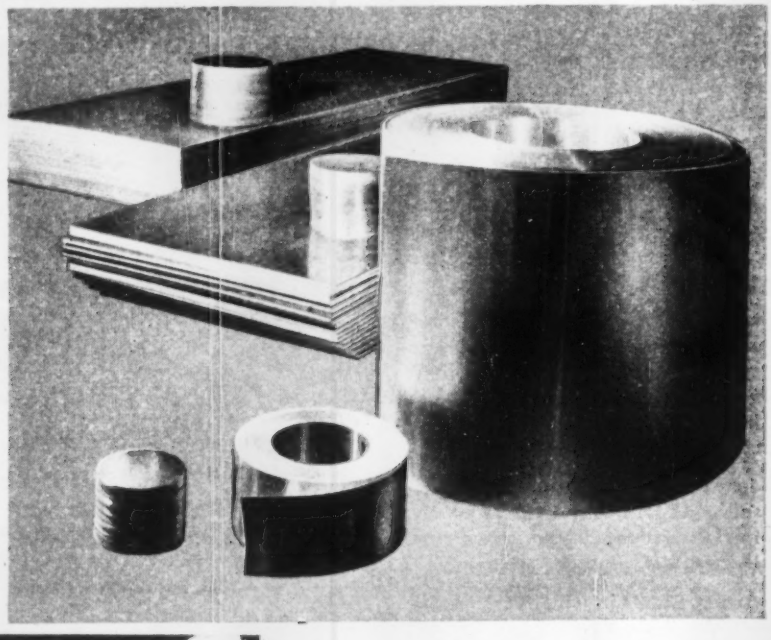


Extruded Shapes

Available in solid, rod, bar, semi-hollow and hollow shapes in all standard alloys. Also available in tubing.

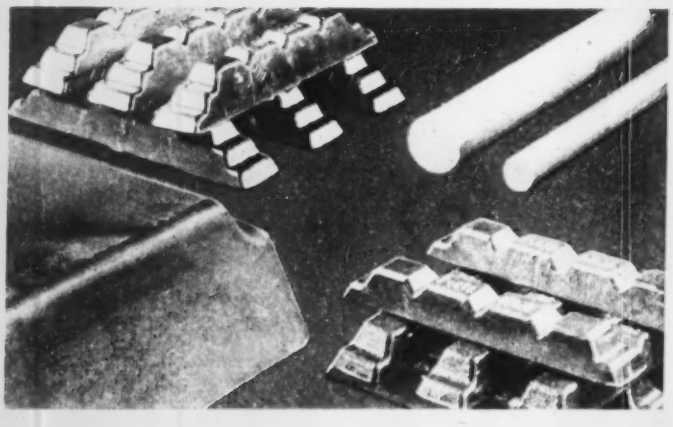
Wire

Supplied as round drawn wire, hexagonal wire, rivet wire, welding wire, screen wire, EC wire, redraw wire.



Sheet and Plate

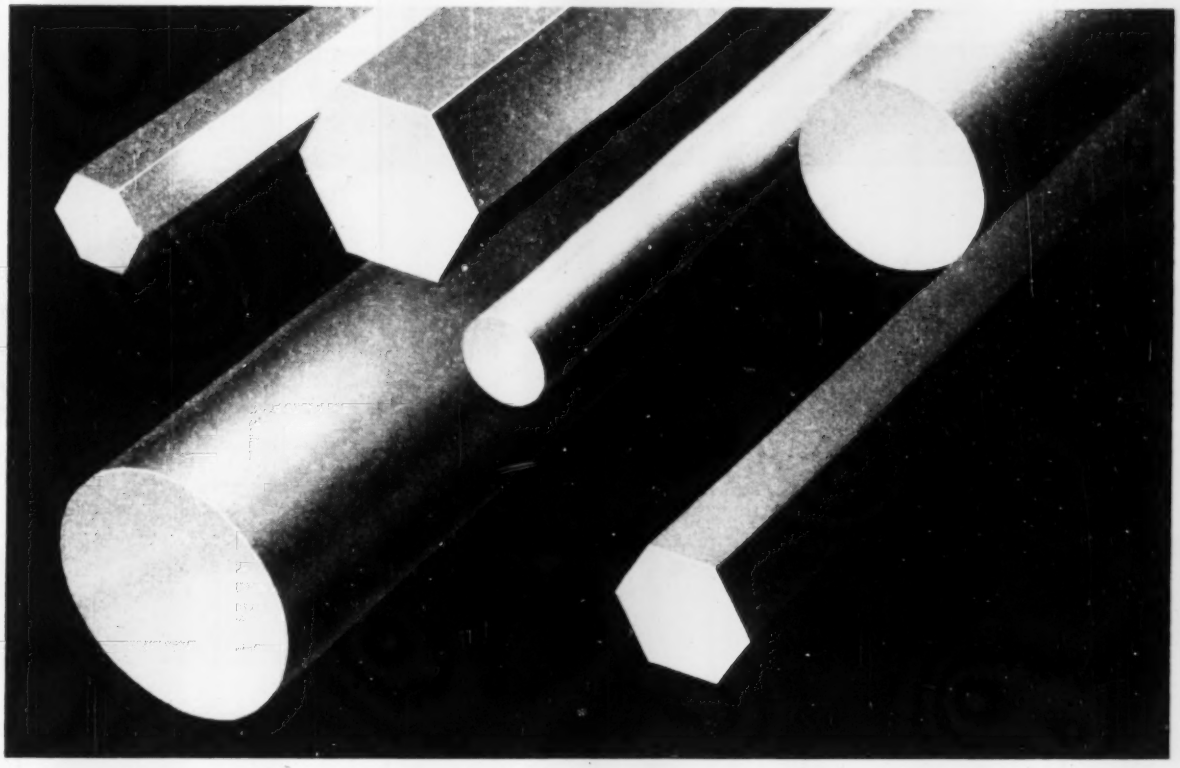
Supplied as flat sheet, plate, coil sheet, circles in a complete range of alloys, sizes and tempers. Specialty sheets also produced to fill volume requirements.



Pig, Ingot and Billets

Kaiser Aluminum Produces Pig, Ingot and Extrusion Billets in a range of alloys and sizes to meet your specific requirements.

for you...the nation's fabricators



Rod and Bar to meet your specifications

Available in a wide range of alloys in rolled and cold finished rod and bar, round and hexagonal standard screw machine stock, hexagonal bar, redraw rod, rivet rod and round forging stock. In addition, Kaiser Aluminum provides the services of its experienced engineers who will be glad to work closely with you in selecting proper alloys for your applications to help improve production methods.

To SUPPLY you and thousands of other fabricators with aluminum in the forms in which it can be used most economically, Kaiser Aluminum produces a broad line of basic and semi-finished mill products.

More than 85 per cent of Kaiser Aluminum's total production is sold in the form of these mill products for fabrication by customers. It's the highest percentage in the industry.

Kaiser Aluminum has earned an unsurpassed reputation for promptness, dependability, and helpful service in providing these products.

Included among Kaiser Aluminum service facilities are: the Sales Engineering Department, the Development Division, and the Metallurgical Research Division —all invaluable sources of experienced assistance and technical data to users of Kaiser Aluminum.

For complete information, call or write any Kaiser Aluminum sales office. Located in principal cities. See our catalog in Sweet's Product Design File or write for copy. Kaiser Aluminum & Chemical Sales, Inc., Oakland 12, California.

Other Kaiser Aluminum products include: Industrial foil, and electrical conductor. Kaiser Aluminum also supplies household, freezer and broiler foil for home uses, Shade Screening and Siding for the building industry and corrugated Roofing Sheet for farm and industrial buildings.

MAIL COUPON FOR FREE HANDBOOK

Send for the new Sheet and Plate Handbook, 152 pages. A "must" for every fabricator of aluminum.

KAISER ALUMINUM & CHEMICAL SALES, INC.,
462 KAISER BLDG., OAKLAND 12, CALIFORNIA

Please send my free copy of "Sheet and Plate Product Information."

Name_____

Firm_____

Address_____

City_____ State_____

Kaiser Aluminum

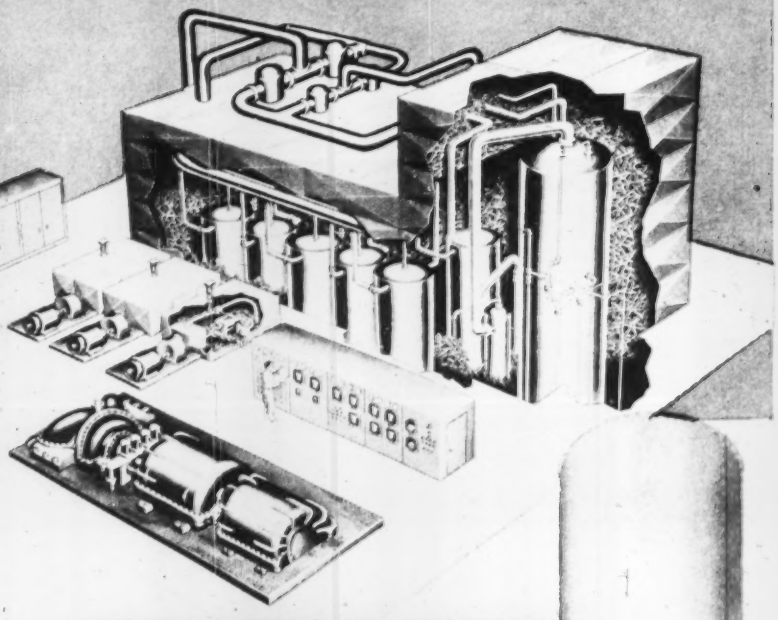
setting the pace—in growth, quality and service

Use the free air to make your own

LOW COST OXYGEN and NITROGEN

2-in-1 Tonnage GENERATORS

Standard models with oxygen capacities to 1000 TONS PER DAY Nitrogen capacities larger



A typical Air Products Tonnage Oxygen Nitrogen Generator in operation since February, 1951. Oxygen capacity, 450 tons per day.

AIR PRODUCTS TONNAGE GENERATORS for oxygen, nitrogen *unlimited!* Standard models or specially designed. High or low pressure cycles according to requirements. Generators for production of oxygen and nitrogen, gas or liquid, in virtually *any* quantity, of *any* purity and at *any* pressure.

AIR PRODUCTS HIGH-PURITY GENERATORS slash oxygen costs *and* inert gas costs. Make *both* with *one* generator—produce super high-purity oxygen and nitrogen *simultaneously* or individually. Make *what* you want *when* you want it: compressed oxygen, high or low pressure nitrogen, liquid oxygen, liquid nitrogen.

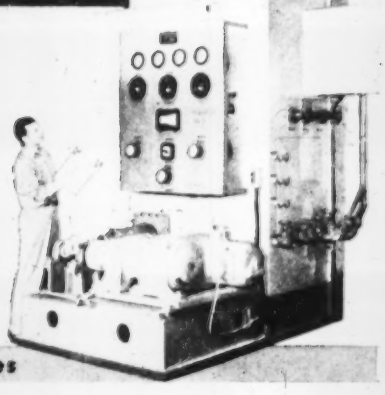
What are your requirements? Write to

AIR PRODUCTS, INCORPORATED
Dept. N , Box 538, Allentown, Pa.

2-in-1 High-Purity GENERATORS

OXYGEN to 99.9% Purity
Capacities to 12,000 cubic feet per hour

NITROGEN to 99.99% Purity
Capacities to 36,000 cubic feet per hour



Air Products

INCORPORATED

OXYGEN-NITROGEN GENERATORS

Specialists in Gas Separation by Low-Temperature Processes

A. R. McNEIL
. . . MacDermid New England sales mgr.

L. R. McCLARY
. . . Olin Industries dept. mgr.

(*Continued from Page* 171)

gineering department are **W. F. Bartholomew Jr.**, **F. W. Eaton Jr.**, **H. R. Lange** and **T. F. Tiefenthaler**.

MacDermid Inc., Waterbury, Conn., appointed **A. R. McNeil** New England sales manager. For the last nine years he has been Bridgeport sales service representative for the company. **Richard Nyquist** of the sales laboratory joined the field force as sales service representative. **Allen Ferguson**, former chief chemist of Electrolux Corp., joined the sales service laboratory.

Bliss & Laughlin Inc. soon starts operations at its new plant in the Detroit area and has named the following salesmen to that territory: **Theodore Ranney**, who transfers from the Chicago sales office; **John Patterson**, formerly with Detroit Steel Corp.; and **Charles H. Scott**, formerly with Columbia Steel & Shafting Co. and Solar Steel Co.

D. E. Dallman was appointed manager, Minneapolis district, **Air Reduction Sales Co.** He replaces the late **M. M. Weist**.

M. G. Manker was appointed district sales manager, **Copperweld Steel Co.**, Steel Division's Warren, O., district sales office located at 803 Loew Bldg., Syracuse, N. Y.

C. L. Rambolt was made chief methods engineer, Cory Division, **Cory Corp.**, Chicago.

L. R. McClary was appointed manager, commercial evaluation department, of the general research organization of **Olin Industries Inc.**, East Alton, Ill.

Sterling Engine Co. named **G. R. Vasbinder** factory manager of its plant, Niagara St., Buffalo. He recently was with Curtiss-Wright Corp.

Louis L. Potomac now is president of **Reflin Co.**, Los Angeles. He formerly headed Alsynite Co. of America.

George L. Wilcox was elected vice president of sales and a director of **Westinghouse Electric International Co.**, New York.

William Turner was appointed manager of **General Electric Co.'s** communications equipment plant in Utica, N. Y., to succeed the late **G. Wesley Nutter**.

Galion Allsteel Body Co., Galion, O., appointed **R. H. Tomlinson** regional representative in Kentucky, Alabama, Mississippi, Louisiana and Arkansas.

Sales offices for coke and chemical sales of **Colorado Fuel & Iron Corp.** are now located in the C. A. Johnson building, Denver. **K. B. Stuart** was appointed general manager, coke and chemical sales; **M. P. Drummond** manager of coke sales; and **F. P. Jasper** manager of chemical sales.

J. C. West, Seattle, was appointed West Coast divisional manager for **Easy Washing Machine Corp.** to succeed **Fred S. Fenton**, retired.

Harry P. Neher Jr. was appointed assistant manager, central staff sales department, **Koppers Co. Inc.**, Pittsburgh. **Thomas M. Cable** was made manager, sales methods section, and **George C. Miller** as manager, international product sales section. Mr. Neher takes the position made vacant by appointment of **Donald MacArthur** as manager, Washington office.

Scaife Co., Oakmont, Pa., appointed **John McGowan** to the New York sales staff.

Russell A. Kawell is director of production planning at the Cory Division, **Cory Corp.**, Chicago.

Robert G. Morgan was made district manager, Moline, Ill., office, and **Robert L. Williams**, district manager, St. Thomas, Ont., office, industrial division, **Timken Roller Bearing Co.**

Harry I. Dixon was appointed New England representative of **Alloy Precision Castings Co.**, Cleveland. He has established an office at 1199 Beacon St., Brookline, Mass.

Jack D. Langer was appointed vice president, **Southwest Steel Corp.**, Pittsburgh. He was branch manager for Luntz Iron & Steel Co. and previously owned M. B. Speer Co. and Langer Iron & Steel Co.

Enos & Anderson Co., Buffalo, mill supplies, appointed **Donald A. Scholz** office manager. He continues purchasing industrial supplies.

Mason H. Jones was named executive assistant to the president of **Tempel Mfg. Co.**, Chicago. He has been with Chicago Molded Products Corp. since 1947.

Ben D. Mills was named assistant general manager, aircraft engine plant, Chicago, **Ford Motor Co.** **C. O. Slaight** was made assistant general manager in charge of procurement and customer relations.

Palmer-Bee Co., Detroit, appointed **Gerald H. LaPiner** advertising manager.

Charles J. Guimbarda was appointed design engineer for **Laclede Arch Co.**, St. Louis. He was project engineer for the U. S.

Navy's jet engine plant in Detroit. **James W. Bennett,** previously sales manager for Penn Industrial Instrument Co., also joins Laclede as a design engineer.

Electric Furnace Co., Salem, O., appointed **J. V. Burrell** Michigan district sales representative, with headquarters in Detroit. He has been with Electric Furnace Co.

Personnel changes in **Jones & Laughlin Steel Corp.'s** warehouse division include **R. W. Burton** as manager of general services, Pittsburgh; **L. C. McGillicuddy** as manager, New York warehouse; **H. B. Asquith,** sales manager, Detroit warehouse; **C. J. Pistor,** resident salesman at Indianapolis for the Chicago warehouse; and **T. E. Snyder,** salesman, Cincinnati warehouse.

Evans Products Co., Plymouth, Mich., appointed **Oscar A. Pratt** production control manager and **F. H. Harl** superintendent of main plant production.

JOSEPH L. WALKER
. . . joins Heyl & Patterson

Joseph L. Walker joined **Heyl & Patterson Inc.,** Pittsburgh, as contracting engineer. His duties will be sales and service of the American line of Reineveld centrifuges and separators. He previously was associated in an engineering capacity with Eastern Gas & Fuel Associates and Rimersburg Coal Co.

Clyde H. Haynes was made manager, patent department, **Nelson Stud Welding Division,** Gregory Industries Inc., Lorain, O.

R. E. Horton was made manager of branch office operations at **Bryant Heater Division,** Affiliated Gas Equipment Inc., with headquarters in Cleveland. **M. J. Fortier** is the new manager of Bryant's St. Louis branch.

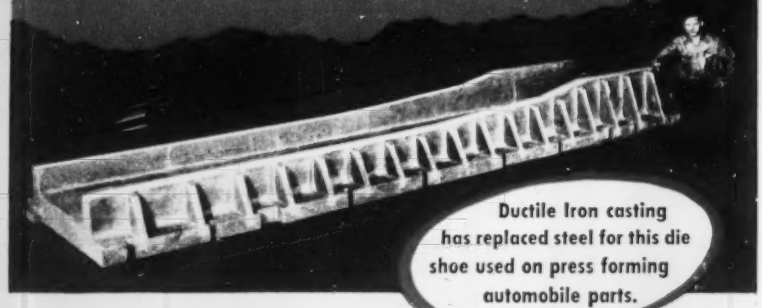
Ralph W. Mowry was appointed assistant manager, flat rolled sales, **Youngstown Sheet & Tube Co.,** Youngstown, to succeed **L. E. Arnold,** now manager, flat rolled sales.

Robert L. Goodyear was appointed chief engineer, accessories engineering division, **Marquardt Aircraft Co.,** Van Nuys, Calif.

Philip H. Fisher succeeds **H. Everett Smith,** resigned, as treasurer of **Wilcox-Gay Corp.,** Brooklyn, N. Y.

Leonard Schnall heads a new field sales and service office in Syracuse, N. Y., established by **General Controls Co.,** Glendale, Calif.

DUCTILE IRON
NEW ENGINEERING MATERIAL



Ductile Iron casting has replaced steel for this die shoe used on press forming automobile parts.

- **TENSILE STRENGTH**
  60,000 PSI, to 115,000 PSI
- **ELONGATION**
  As cast: approx. 3%
  Annealed: 15% to 22%
- **YIELD STRENGTH**
  45,000 PSI to 65,000 PSI

A variety of Ductile Iron castings

A pioneer in the production of this remarkable metal, the BELOIT FOUNDRY conducts a constant program of research and analysis to meet the growing demand for Ductile Iron. We will gladly answer inquiries about applications of Ductile Iron (or our other irons) to your products.

BELOIT FOUNDRY CO.
High test Iron, Alloy Irons, and Ductile Iron
Castings from a fraction of a pound thru 50 tons
BELOIT, WISCONSIN

DETROIT OFFICE
8100 Lyndon Ave.
Phone Texas 4-1227

Chicago Office
8525 Vincennes Ave.
Phone Radcliffe 3-4114

BF

Pressure Processing

. . . whoever uses it in their production is a customer or potential customer of **H-P-M**

Taming Temperamental MAGNESIUM . . . a Cinch with All-Hydraulic H-P-Ms!

The Emerson Electric Mfg. Co., St. Louis, draws thin magnesium alloy sheets to a depth of 30". To meet the demands of this difficult job, which calls for accurate control of heat, speeds and pressures, H-P-M designed and built this 600-ton *all-hydraulic* press incorporating an extreme range of accurate, stepless speeds (0" per min. to max.) and pressure controls.

When it comes to solving tough production problems . . . it will pay you well to talk shop with an H-P-M engineer about *all-hydraulic* pressure processing and H-P-Ms. Write today!

HPM THE HYDRAULIC PRESS MFG. CO.

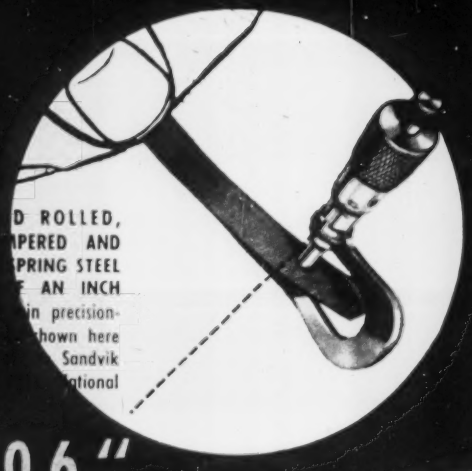
1044 Marion Road, Mount Gilead, Ohio, U. S. A.

Presses for Every Pressure Processing Application

This kind of

SANDVIK Super-Precision

Stretches Your SPRING STEEL Dollars



D ROLLED,
PERED AND
PRING STEEL
E AN INCH
in precision-
hown here
Sandvik
tional

.0006"

Here's evidence of Sandvik's ability to give you longer pounds of steel by cutting down "within-tolerance waste."

Sandvik Super-Precision does more than just keep gauge within specified tolerances. It consistently brings the strip closer to the *exact* size. This minimizes oversize waste . . . gives you more parts per pound . . . more production per dollar.

Remember too, that Sandvik's uniform physical characteristics from lot to lot means longer tool life plus better performance of the finished part.

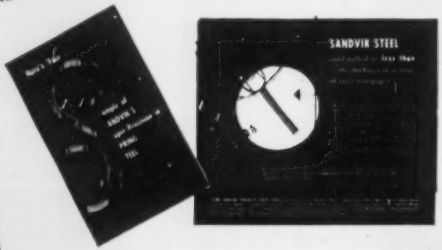
Sandvik cold rolled high carbon strip steel is available:

- Precision-rolled in thickness to fit your requirements.
- In straight carbon and alloy grades.
- In special analysis for specific applications.
- In more than 800 stock sizes.
- Annealed, unannealed or hardened and tempered.
- Polished bright, yellow or blue.
- With square, round or dressed edges.

Ask your nearest Sandvik office for further information or technical assistance.

SOME SANDVIK SWEDISH SPECIALTY STRIP STEELS Steel for Textile Machine Parts • Band Saw Steels; Metal Band, Wood Band and Butcher Band • Camera Shutter Steel • Clock and Watch Spring Steels • Compressor Valve Steel • Doctor Blade Steel • Feeler Gauge Steel • Knife Steels • Razor Blade Steel • Reed Steels • Shock Absorber Steel • Sinker Steel • Spring Steels • Trowel Steel • Vibrator Reed Steel, etc.

THIS FREE FOLDER . . .
CONTAINS A SAMPLE OF SANDVIK'S SUPER-PRECISION SPRING STEEL. COLD ROLLED TO .0006" . . . LESS THAN 1/5th THE THICKNESS OF A PAGE OF YOUR NEWSPAPER.
Write for your free copy.



SANDVIK STEEL, INC.
111 EIGHTH AVE., N. Y. 11, N. Y., WAtkins 9-7180
230 N. Michigan Ave., Chicago 1, Ill., FRanklin 2-5638
1736 Columbus Rd., Cleveland 13, Ohio, CHerry 1-2303
SANDVIK CANADIAN LTD., P. O. BOX 40, Station O, Montreal 9, P. Q.

SS-86

The Market Outlook

PRESSURE for higher steel prices is mounting.

For some time the steel industry has felt its prices should be higher. Now, significantly, some of the industry's principal figures are openly saying steel prices are too low.

TRIAL BALLOONS—In a talk at an industrial convention Benjamin F. Fairless, chairman of U. S. Steel Corp., the nation's largest steel producer, lamented the "financial malnutrition" of the steel industry and pointed out that since 1940 his company's employment costs have soared 155 per cent, the cost of goods and services have risen 138 per cent but that the price of steel has gone up only 87 per cent.

Coincidentally, Ernest T. Weir, chairman of National Steel Corp., the country's fifth largest steel producer, expressed concern in a press conference at Pittsburgh that the steel industry's earnings are too low for the safety of the industry, and asserted that steel prices are and have been too low.

CAUSE FOR ALARM—Helping to inspire steel executives to speak out on prices are steel companies' annual reports for 1952. A compilation of salient statistics from these reports, STEEL's 28th Annual Financial Analysis of the Steel Industry (opposite p. 74 of this issue) shows that 30 steel producers representing 94 per cent of the country's steelmaking capacity made in 1952 a net profit of only 4.91 cents per dollar of sales, compared with 5.71 cents in 1951. The 1952 rate is the lowest since the 5.46 figure of 1946, and, as everyone knows, a cent is worth less today than it was in '46.

BIGGEST LOSER—Responsible partly for the decline in earnings in 1952 was the steelworkers' strike. Largest loser from the strike was Uncle Sam. His take in federal income and excess profits taxes from the steel companies was $1 billion less than it would have been had there been no strike.

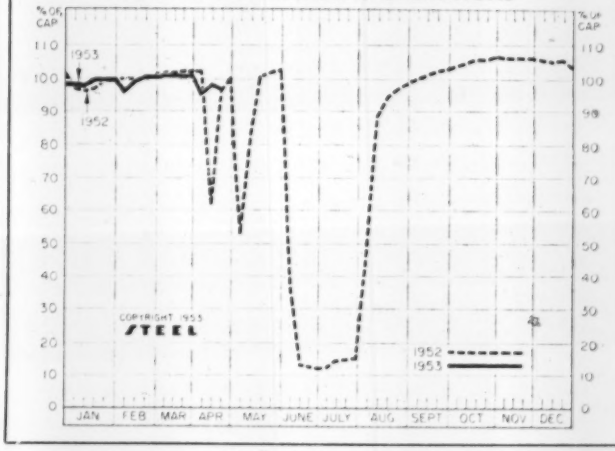
Even though steel companies are dissatisfied with their earnings, they will be cautious, perhaps even reluctant, in considering a general increase in prices. The steelworkers' union plans to ask the companies in a few weeks for a wage increase. Even though a steel price increase is justified on the basis of present conditions, the union would use it as additional leverage in their wage demands. Also, steel companies will not be inclined to do anything price-wise that would embarrass the new administration at Washington, under which industry gained freedom from price controls only recently.

THE CUSTOMER COUNTS—Another deterrent to a general price increase on steel is the movement, slow though it may be, toward a balance between supply and demand in steel. One of many examples of this is the report from San Francisco that steel buyers are getting into a "shopping" mood. For the first time in recent years, they are beginning to put the price factor above the delivery factor. They are turning down promises of immediate delivery to shop around for a better price. Shopping sometimes pays dividends because of the differences in freight charges.

STRONG MARKET—While sales resistance is growing in some areas and on certain products, over-all demand for steel continues strong. The key to how long the strong demand will exist is held by the automobile industry, which is leaving no wheel unturned in its effort to reach its high production goals. This zeal is levying an inordinate demand on the light, flat-rolled steel products. At the same time, military needs for ammunition is keeping a heavy demand on large bars. In contrast, the call for galvanized sheets has waned to the point that one producer is operating only half of its galvanizing facilities.

OUTPUT EASES—Even though over-all demand for steel exceeds supply, the industry was unable to operate at quite as high a rate in the week ended Apr. 18 as in some of the weeks earlier this year. Steel for ingots and castings was produced at a rate of 97 per cent of capacity. Preceding week's rate was 98 per cent.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged at leading production points)

	Week Ended Apr. 18	Change	Same Week 1952	Same Week 1951
Pittsburgh	97.5	0*	102	102
Chicago	105	— 1*	94	105
Mid-Atlantic	96.5	0	93	100.5
Youngstown	95	— 10.5	95	106
Wheeling	100.5	— 0.5	101.5	97
Cleveland	103.5	— 0.5*	97	103.5
Buffalo	106.5	0	104	104
Birmingham	101	0	102	100
New England	87	— 4	85	91
Cincinnati	94	— 4.5	94	105
St. Louis	75.5	+ 4	90	95
Detroit	106	— 3	107	105
Western	110.5	+ 0.5	88.5	100.5
Estimated National rate	97	— 1	96.5	103

* Change from preceding week's revised rate.

Based on weekly steelmaking capacity of 2,254,459 net tons in 1953; 2,077,040 tons in 1952; 1,995,034 tons in 1951.

The Metalworking Outlook—p. 59 Production Engineering News—p. 109

Composite Market Averages

FINISHED STEEL PRICE INDEX: Bureau of Labor Statistics (1947-1949=100)	Apr. 14 1953	Apr. 7 1953	Month Ago	March Average
	130.7	130.7	130.7	130.7

AVERAGE PRICES (BUREAU OF LABOR STATISTICS)
Week Ended Apr. 11, 1953

Units are 100 lb except where otherwise noted below in parentheses. For complete description of products see insert following p. 28, STEEL, Sept. 8, 1952.

Rails	$3.775	Sheets, C.R. carbon	$5.275
Track spikes	6.950	Sheets, galv.	6.765
Track bolts	9.958	Strip, C.R., carbon	5.100
Tie plates	4.775	Strip, C.R. stainless (lb)	0.333
Joint bars	4.925	Pipe, black, buttweld (100 ft)	7.090
Plates, carbon	4.150	Pipe, galv., buttweld (100 ft)	8.778
Structural shapes	4.200	Boiler tubes (100 ft)	31.663
Bars, tool steel (lb)	1.576	Tin plate (100 lb base box)	8.950
Bars, 3120 alloy	6.685	Terne plate (100 lb base box)	7.750
Bars, stainless (lb)	0.153	Wire, carbon, merchant	6.075
Bars, carbon	4.100	Wire, fence, galv.	6.425
Bars, reinforcing	4.050	Nails (100 lb kegs)	7.410
Bars, C.F. carbon	5.925	Wire, barbed (80 rod spool)	5.880
Sheets, H.R. carbon	4.125	Woven wire fence (20 rod roll)	13.629

FINISHED PRICE INDEX, Weighted: Calculated by STEEL*	Apr. 16 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	181.31	181.31	181.31	171.92	135.91
Index in cents per lb	4.912	4.912	4.912	4.657	3.682

ARITHMETICAL PRICE COMPOSITES: Calculated by STEEL*					
Finished Steel NT	$110.98	$110.98	$110.98	$106.32	$81.14
No. 2 Fdry. Pig Iron, GT	55.04	55.04	55.04	52.54	39.65
Basic Pig Iron, GT	54.96	54.96	54.66	52.16	39.18
Malleable Pig Iron, GT	55.77	55.77	55.77	53.27	40.26
Steelmaking Scrap, GT	43.42	43.75†	44.17	43.00	40.42

* For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130. †Revised.

Comparison of Prices

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED MATERIALS	Apr. 16 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	3.95	3.95	3.95	3.70	2.90
Bars, H.R., Chicago	3.95	3.95	3.95	3.70	2.90
Bars, H.R., del Philadelphia	4.502	4.502	4.502	4.223	3.356
Bars, C.F., Pittsburgh	4.925	4.925	4.925	4.55	3.55
Shapes, Std., Pittsburgh	3.85	3.85	3.85	3.65	2.80
Shapes, Std., Chicago	3.85	3.85	3.85	3.65	2.80
Shapes, del., Philadelphia	4.13	4.13	4.13	3.918	2.968
Plates, Pittsburgh	3.90	3.90	3.90	3.70	2.95
Plates, Chicago	3.90	3.90	3.90	3.70	2.95
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.15	3.45
Plates, Sparrows Point, Md.	3.90	3.90	3.90	3.70	2.95
Plates, Claymont, Del.	4.35	4.35	4.35	4.15	3.65
Sheets, H.R., Pittsburgh	3.775	3.775	3.775	3.60-75	2.80
Sheets, H.R., Chicago	3.775	3.775	3.775	3.60	2.80
Sheets, C.R., Pittsburgh	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Chicago	4.575	4.575	4.575	4.35	3.55
Sheets, C.R., Detroit	4.775	4.775	4.775	4.55	3.71
Sheets, Galv., Pittsburgh	5.075	5.075	5.075	4.80	3.95
Strip, H.R., Pitts.	3.975-4.225	3.975-4.225	3.975-4.225	3.75-4.00	3.05
Strip, H.R., Chicago	3.725	3.725	3.725	3.50	2.80
Strip, C.R., Pittsburgh	5.10-5.80	5.10-5.80	5.10-5.80	4.65-5.35	3.80
Strip, C.R., Chicago	5.35	5.35	5.35	4.90	3.65
Strip, C.R., Detroit	5.30-6.05	5.30-6.05	5.30-6.05	4.85-5.60	3.71
Wire, Basic, Pitts.	5.475-5.225	5.475-5.225	5.475-5.225	4.85-5.10	3.775
Nails, Wire, Pittsburgh	6.35	6.35	6.35	5.80-6.20	5.20
Tin plate, box, Pittsburgh	$8.95	$8.95	$8.95	$8.70	$6.70
SEMIFINISHED					
Billets, forging, Pitts. (NT)	$70.50	$70.50	$70.50	$66.00	$54.00
Wire rods, $\frac{7}{32}$-$\frac{9}{32}$", Pitts.	4.425	4.425	4.425	4.10-30	3.175
PIG IRON, Gross Ton					
Bessemer, Pitts.	$55.50	$55.50	$55.50	$53.00	$40.00
Basic, Valley	54.50	54.50	54.50	52.00	39.00
Basic, del. Phila.	59.25	59.25	59.25	56.61	42.004
No. 2 Fdry, Pitts.	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry, Chicago	55.00	55.00	55.00	52.50	39.00
No. 2 Fdry, Valley	55.00	55.00	55.00	52.50	39.50
No. 2 Fdry, del. Phila.	59.75	59.75	59.75	57.11	42.504
No. 2 Fdry, Birm.	51.38	51.38	51.38	48.88	37.88
No. 2 Fdry (Birm.) del. Cin.	58.93	58.93	58.93	55.49	42.23
Malleable, Valley	55.00	55.00	55.00	52.50	39.50
Malleable, Chicago	55.00	55.00	55.00	52.50	39.50
Charcoal, Lyles, Tenn.	68.50	68.50	68.50	66.00	55.00
Ferromanganese, Etna, Pa.	228.00	228.00	228.00	188.00	151.00*

* F.o.b. cars, Pittsburgh.

SCRAP, Gross Ton (including broker's commission)

No. 1 Heavy Melt, Pitts.	$44.00	$44.00	$44.00	$44.00	$40.25
No. 1 Heavy Melt, E. Pa.	43.50	43.50	46.00	42.50	42.00
No. 1 Heavy Melt, Chicago	42.75	42.75	42.50	42.50	39.00
No. 1 Heavy Melt, Valley	42.75	44.25	44.25	44.00	40.25
No. 1 Heavy Melt, Cleve.	42.75	44.25	44.25	43.00	39.75
No. 1 Heavy Melt, Buffalo	45.50	47.00	43.50	43.00	43.00
Rails, Rerolling, Chicago	52.00	56.00	56.00	52.50	49.50
No. 1 Cast, Chicago	42.50	44.00	44.00	43.00†	63.00

† F.o.b. shipping point.

COKE, Net Ton

Beehive, Furn. Connlsvl.	$14.75	$14.75	$14.75	$14.75	$12.50
Beehive, Fdry. Connlsvl.	17.00	17.00	17.00	17.50	14.875
Oven Fdry, Chicago	24.50	24.50	24.50	23.00	18.00

PIG IRON

F.o.b. furnace prices as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies on pages 184-185.

PIG IRON, Gross Ton	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem, Pa. B2	$56.50	$57.00	$57.50	$58.00
NewYork, del.	....	60.78	61.28	....
Newark, del.	59.52	60.02	60.52	61.02
Philadelphia, del.	59.25	59.75	60.25	60.75
Birmingham District				
AlabamaCity, Ala. R2	50.88	51.38	....	....
Birmingham R2	50.88	51.38	....	....
Birmingham S9	....	51.38	....	....
Woodward, Ala. W15	50.88	51.38	....	....
Cincinnati, del.	....	58.93	....	....
Buffalo District				
Buffalo R2	54.50	55.00	55.50	....
Buffalo H1	54.50	55.00	55.50	....
Tonawanda, N.Y. W12	54.50	55.00	55.50	....
No. Tonawanda, N.Y. T9	....	55.00	55.50	....
Boston, del.	65.15	65.65	66.15	....
Rochester, N.Y., del.	57.52	58.02	58.52	....
Syracuse, N.Y., del.	58.62	59.12	59.62	....
Chicago District				
Chicago I-3	54.50	55.00	55.00	55.50
Gary, Ind. U5	54.50	....	55.00	....
IndianaHarbor, Ind. I-2	54.50	....	55.00	....
So. Chicago, Ill. W14	54.50	55.00	55.00	....
So. Chicago, Ill. Y1	54.50	55.00	55.00	....
So. Chicago, Ill. U5	54.50	....	55.00	55.50
Milwaukee, del.	56.67	57.17	57.17	57.67
Muskegon, Mich., del.	....	61.30	61.30	....
Cleveland District				
Cleveland A7	54.50	55.00	55.00	55.50
Cleveland R2	54.50	55.00	55.00	....
Akron, O., del. from Cleve.	57.11	57.61	57.61	58.11
Lorain, O. N3	54.50	....	....	55.50
Duluth I-3	....	....	55.00	....
Erie, Pa. I-3	54.50	55.00	55.00	55.50
Everett, Mass. E1	....	59.50	60.00	....
Fontana, Calif. K1	60.50	61.00	....	....
GraniteCity, Ill. G4	56.40	56.90	57.40	....
St. Louis, del. (inc. tax)	57.15	57.65	58.15	....
Ironton, Utah C11	54.50	55.00	....	....
Geneva, Utah C11	54.50	55.00	....	....
LoneStar, Tex. L6	50.50	*51.00	51.00	....
Minnequa, Colo. C10	56.50	57.50	57.50	....
Rockwood, Tenn. T3	....	....	58.50	....
Pittsburgh District				
Neville Island, Pa. P6	....	55.00	55.00	55.50
Pitts., N.&S. sides, Ambridge				
Aliquippa, del.	....	56.37	56.37	56.87
McKeesRocks, del.	....	56.04	56.04	56.54
Lawrenceville, Homestead,				
Wilmerding, Monaca, del.	....	56.66	56.66	57.16
Verona, Trafford, del.	....	57.19	57.19	57.69
Brackenridge, del.	....	57.45	57.45	57.95
Bessemer, Pa. U5	54.50	....	55.00	55.50
Clairton, Rankin, So. Duquesne, Pa. U5	54.50	....	....	....
McKeesport, Pa. N3	54.50	....	....	55.50
Monessen, Pa. P7	56.50	....	....	....
Sharpsville, Pa. S6	....	....	55.00	55.50
Steelton, Pa. B2	56.50	57.00	57.50	58.00
Swedeland, Pa. A3	58.50	59.00	59.50	60.00
Toledo, O. I-3	54.50	55.00	55.00	55.50
Cincinnati, del.	59.97	60.47	....	....
Troy, N.Y. R2	56.50	57.00	57.50	58.00
Youngstown District				
Hubbard, O. Y1	54.50	55.00	55.00	....
Youngstown Y1	54.50	55.00	55.00	....
Youngstown U5	54.50	....	....	55.50
Mansfield, O., del.	59.15	59.65	59.65	60.15

*Low phos, southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.
Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.
Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.
Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton
(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si)

Jackson, O. G2, J1	$65.50
Buffalo H1	66.75

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton
(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls, N.Y. P15	$91.00
Keokuk, Iowa, Openhearth & Fdry. frt. allowed K2	92.50
Keokuk, OH & Fdry., 12¼ lb piglets, 16% Si, frt. allowed K2	95.50
Wenatchee, Wash., OH & Fdry., frt. allowed K2	92.50

CHARCOAL PIG IRON, Gross Ton
(Low phos semi-cold blast; differential charged for silicon over base grade; also for hard chilling iron Nos. 5 & 6)

Lyles, Tenn. T3	$68.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Cleveland, intermediate, A7	$59.50
Steelton, Pa. B2	62.50
Philadelphia, delivered	66.05
Troy, N.Y. R2	62.50

(Material in this department is protected by copyright and its use in any form without permission is prohibited)

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

Primary Metals

Copper: Electrolytic 30.00c-32.00c, Conn. Valley; Lake 33.00c, delivered, nom.; foreign electrolytic, del. 32.00c-36.50c.

Brass Ingots: 85-5-5-5 (No. 115) 27.50c; 88-10-2 (No. 215) 37.75c; 80-10-10 (No. 305) 32.00c; No. 1 yellow (No. 405) 22.75c.

Zinc: Prime western 11.00c; brass special 11.25c, intermediate 11.50c; East St. Louis; high grade 12.35c, and special high grade 12.50c delivered.

Lead: Common 12.30c; chemical 12.40c; corroding, 12.40c, St. Louis.

Primary Aluminum: 99% plus, ingots 20.50c, pigs 19.50c. Base prices for 10,000 lb and over. Freight allowed on 500 lb or more but not in excess of rate applicable on 30,000 lb c.l. orders.

Secondary Aluminum: Piston alloys 24.00-24.75; No. 12 foundry alloy (No. 2 grade) 22.00-23.50; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 24.00-26.00; grades 2, 23.25-24.50; grade 3, 22.50-23.50; grade 4, 21.00-22.50.

Magnesium: Commercially pure (99.8%) standard ingots, 10,000 lb and over 27.00c, f.o.b. Freeport, Tex.

Tin: Grade A, prompt RFC, 121.50c; outside market, 95.00c, nom.

Antimony: American 99-99.8% and over but not meeting specifications below 34.50c; 99.8% and over (arsenic 0.05% max., other impurities 0.1% max.) 35.00c; f.o.b. Laredo, Tex., for bulk shipments.

Nickel: Electrolytic cathodes, 99.9%, base sizes at refinery, unpacked, 60.00c; 25-lb pigs, 62.65c; "XX" nickel shot, 63.65c; "F" nickel shot or ingots, for addition to cast iron, 60.00c. Prices include import duty.

Mercury: Open market, spot, New York, $195-$197, per 76-lb flask.

Beryllium-Copper: 3.75-4.25% Be, $37.72 per lb of contained beryllium, f.o.b. Reading, Pa.

Cadmium: "Regular" straight or flat forms, $2 del; special or patented shapes $2.15.

Cobalt: 97.99%, $2.40 per lb for 500 lb (kegs); $2.42 per lb for 100 lb (case); $2.47 per lb under 100 lb.

Gold: U. S. Treasury, $35 per ounce.

Silver: Open market, New York 85.25c per oz.

Platinum: $90-$93 per ounce from refineries.

Palladium: $23-$24 per troy ounce.

Iridium: $175-$185 per troy ounce.

Titanium (sponge form): $5 per pound.

Rolled, Drawn, Extruded Products

COPPER AND BRASS

(Cents per pound, f.o.b. mill, effective Apr. 1, 1953. Listings are lowest quotations.)

Sheet: Copper 50.48; yellow brass 42.87; commercial bronze, 95% 49.89; 90% 48.76; red brass, 85% 47.11; 80% 45.99; best quality, 44.43; nickel silver, 18%, 59.84; phosphor-bronze grade A, 5%, 70.50.

Rod: Copper, hot-rolled 46.83; cold-drawn 48.08; yellow brass free cutting, 36.68; commercial bronze 95% 49.58; 90% 48.45; red brass 85%, 46.80; 80%, 45.68.

Seamless Tubing: Copper 50.42; yellow brass 45.78; commercial bronze, 90%, 51.72; red brass, 85%, 49.92.

Wire: Yellow brass 43.16; commercial bronze, 95%, 50.18; 90%, 49.05; red brass, 85%, 47.40; 80%, 46.28; best quality brass, 44.72.

(Base prices, effective Apr. 1, 1953)

Copper Wire: Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 37.46; 30,000 lb lots, 37.58; l.c.l. 38.08. Weatherproof, 100,000 lb, 37.85; 30,000 lb, 38.10; l.c.l., 38.60. Magnet wire del., 15,000 lb or more 43.93; l.c.l., 44.68.

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more, but not in excess of rate applicable on 30,000 lb c.l. orders, Effective Jan. 22, 1953.)

Sheets and Circles: 2s and 3s mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	32.9	...	...
0.135-0.096	12-48	33.4	...	...
0.095-0.077	12-48	34.1	31.8	36.3
0.076-0.061	12-48	34.7	32.0	36.5
0.060-0.048	12-48	35.0	32.2	36.8
0.047-0.038	12-48	35.5	32.6	37.1
0.037-0.030	12-48	35.9	33.0	37.8
0.029-0.024	12-48	36.5	33.3	38.3
0.023-0.019	12-36	37.1	34.0	39.0
0.018-0.017	12-36	37.9	34.6	39.9
0.016-0.015	12-36	38.8	35.4	41.1
0.014	12-24	39.8	36.4	42.4
0.013-0.012	12-24	40.9	37.1	43.4
0.011	12-24	41.9	38.3	45.0
0.010-0.0095	12-24	43.1	39.4	46.6
0.009-0.0085	12-24	44.3	40.7	48.5
0.008-0.0075	12-24	45.8	41.9	50.3
0.007	12-18	47.3	43.4	52.6
0.006	12-18	48.9	44.8	57.6

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	Round— 17S-T4	Hexagonal 17S-T4
0.125	56.8	...
0.156-0.188	48.0	...
0.219-0.313	45.3	...
0.375	43.7	52.4
0.406	43.7	...
0.438	43.7	52.4
0.469	43.7	...
0.500	43.7	52.4
0.531	43.7	...
0.563	43.7	49.2
0.594	43.7	...
0.625	43.7	49.2
0.688	43.7	49.2
0.750-1.000	42.6	46.4
1.063	42.6	44.8
1.125-1.500	41.0	44.8
1.563	40.5	...
1.625	39.8	43.2
1.688-2.000	39.8	...

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh) Sheets: Full rolls, 140 sq ft or more $17.50 per cwt; add 50c cwt 100 sq ft to 140 sq ft. Pipe: Full coils $17.50 per cwt. Traps and bends: List prices plus 45%.

ZINC

Sheets 23.00c, f.o.b. mill 36,000 lb and over. Ribbon zinc in coils, 19.50-20.50c, f.o.b. mill, 36,000 lb and over. Plates, not over 12-in., 20.75-21.75c; over 12-in., 20.75-21.75c.

"A" NICKEL

(Base prices f.o.b. mill, effective Mar. 9, 1953) Sheets, cold-rolled 86.50c. Strip, cold-rolled 92.50c. Rods and shapes, 82.50c. Plates, 84.50c. Seamless tubes 115.50c.

MONEL

(Base prices f.o.b. mill, effective Mar. 9, 1953) Sheets, cold-rolled 67.50c. Strip, cold-rolled 70.50c. Rods and shapes, 65.50c. Plates 66.50c. Seamless tubes, 100.50c. Shot and blocks, 57.00c.

MAGNESIUM

Extruded Rounds 12 in. long, 1.31 in. in diameter, less than 25 lb 58.00c-85.00c; 25 to 99 lb, 48.00c-55.00c; 100 lb to 5000 lb, 44.00c.

TITANIUM

(Prices per lb, 10,000 lb and over, f.o.b. mill) Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forgings, $6; hot-rolled and forged bars, $6.

Plating Materials

Chromic Acid: 99.9% flakes, f.o.b. Philadelphia, carloads 27.00c; 5 tons and over 27.50c; 1 to 5 tons, 28.00c; less than 1 ton 28.50c.

Copper Anodes: Base 2000 to 5000 lb; f.o.b. shipping point, freight allowed: Flat, rolled, 42.18c; oval 41.68c.

Nickel Anodes: Rolled, oval, carbonized, carloads 81.00c; 5000 to 29,999 lb, 83.00c; 500 to 4999 lb, 85.00c; 1 to 199 lb, 89.00c, f.o.b. Cleveland.

Nickel Chloride: In 100 lb bags; 10,000 lb and over, 37.00c; 2000 to 9999 lb, 38.00c; 400 to 1900 lb, 40.00c; 300 lb, 42.00c; 200 lb, 43.00c; 100 lb, 45.00c, f.o.b. Cleveland.

Sodium Stannate: 25 lb cans only, less than 100 lb to consumers $1.10 per lb; 100 or 350 lb drums only, 100 to 600 lb 71.60c; 700 to 1900 lb, 69c; 2000 to 9900 lb, 67.3c. Freight allowed east of Mississippi and north of Ohio and Potomac rivers. Based on $1.215 tin.

Tin Anodes: Bar, 1000 lb and over, $1.42; 500 to 999 lb, $1.425; 200 to 499 lb, $1.43; less than 200 lb, $1.445. Freight allowed east of Mississippi and north of Ohio and Potomac. Based on $1.215 tin.

Zinc Cyanide: 100 lb drums, less than 10 drums 54.30c, 10 or more drums, 52.30c, f.o.b. Niagara Falls, N. Y.

Stannous Sulphate: 100 lb kegs or 400 lb bbl, less than 2000 lb $1.11; more than 2000 lb, $1.09. Freight allowed east of Mississippi and north of Ohio and Potomac rivers. Based on $1.215 tin.

Stannous Chloride (Anhydrous): In 400 lb bbl, $1.25; 100 lb kegs $1.26, f.o.b. Carteret, N. J., freight allowed on 100 lb or more. Based on $1.215 tin.

Scrap Metals

Brass Mill Allowances

(Prices in cents per pound for less than 20,000 pounds, f.o.b. shipping point; on lots over 20,000 pounds at one time, of any or all kinds of scrap, add 1 cent per pound. Prices effective Apr. 1, 1953)

	Clean Heavy	Clean Rod Ends	Clean Turnings
Copper	28.625	28.625	27.875
Yellow Brass	21.375	21.125	19.625
Commercial Bronze			
95%	27.250	27.000	26.500
90%	26.125	25.875	25.375
Red Brass			
85%	25.125	24.875	24.375
80%	24.125	23.875	23.375
Best Quality(78-80%)	22.500	22.250	21.750
Muntz metal	20.000	19.750	19.250
Nickel silver, 10%	25.250	25.000	12.625
Phos. Bronze, A	30.625	30.375	29.375
Naval Brass	20.000	19.750	19.250
Manganese Bronze	20.000	19.750	19.250

REFINERS' BUYING PRICES

(Cents per pound, delivered refinery, carload lots)

No. 1 copper 24.75c; No. 2 copper 22.25c; light copper 21.75c; refinery brass (60% copper) per dry copper content 21.50c, nom.

INGOT MAKERS' COPPER AND BRASS SCRAP BUYING PRICES

(Carlots, delivered)

No. 1 copper, nom. 24.00c; No. 2 copper, nom. 22.00c; light copper, nom. 20.00c; No. 1 composition borings 19.00c; No. 1 composition solids, 20.00c; radiators, 15.50c; heavy yellow brass solids, 15.50c; yellow brass turnings 14.50c.

SMELTERS' BUYING PRICES FOR SCRAP ALUMINUM

(Carlots, delivered)

28 aluminum clippings, 16.00-17.00c; mixed clippings, 15.00-15.50c; old aluminum sheet 13.00-14.50c; old aluminum cast, 13.50-14.50c; borings and turnings 12.50-13.00c.

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and brass: Heavy copper and wire, No. 1 23.00-24.00; No. 2 21.00-21.50; light copper 19.00-19.50; No. 1 composition red brass 19.00; No. 1 composition turnings 18.50; mixed brass turnings 13.00; new brass clippings 19.50; No. 1 brass rod turnings 17.00; light brass 12.50; heavy yellow brass 14.50; new brass rod ends 17.50; auto radiators, unsweated 15.00; cocks and faucets 15.00; brass pipe 17.50.

Aluminum: Clippings 28, 13.00; old sheets 10.00; pistons 10.00; borings and turnings 8.00; pistons and struts 6.50.

Tin: No. 1 pewter 60.00; block tin pipe 85.00; No. 1 babbitt 45.00.

Lead: Heavy 9.25-9.75; battery plates 4.75-5.00; linotype and stereotype 11.00-11.50; electrotype 9.25-9.50; mixed babbitt 12.00-12.75.

Zinc: Old zinc, 5.00; new die cast scrap, 5.00; old die cast scrap, 4.00.

Nickel: Sheets and clips 58.00-60.00; rolled anodes 58.00-60.00; turnings 58.00-60.00; rod ends 58.00-60.00.

Monel: Clippings 33.00; old sheet 30.00; turnings 25.00; rods 33.00.

DAILY PRICE RECORD

1953	Copper	Lead	Zinc	Tin	Aluminum	Antimony	Nickel	Silver
Apr. 16	30.00-32.00	12.30	11.00	95.00-121.50	20.50	34.50	60.00	85.25
Apr. 15	30.00-32.00	12.30	11.00	98.50-121.50	20.50	34.50	60.00	85.25
Apr. 14	30.00-32.00	12.30	11.00	98.50-121.50	20.50	34.50	60.00	85.25
Apr. 13	30.00-32.00	12.30	11.00	99.50-121.50	20.50	34.50	60.00	85.25
Apr. 10-11	30.00-32.00	12.30	11.00	105.00-121.50	20.50	34.50	60.00	85.25
Apr. 9	30.00-33.00	12.30	11.00	110.50-121.50	20.50	34.50	60.00	85.25
Apr. 7-8	30.00-33.00	12.80	11.00	116.25-121.50	20.50	34.50	60.00	85.25
Apr. 6	30.00-33.00	13.30	11.00	116.25-121.50	20.50	34.50	60.00	85.25
Apr. 2-4	30.00-34.50	13.30	11.00	116.50-121.50	20.50	34.50	60.00	85.25
Apr. 1	30.00-34.50	13.30	11.00	118.50-121.50	20.50	34.50	60.00	85.25
Mar. 25-31	27.50-34.50	13.30	11.00	121.50	20.50	34.50	60.00	85.25
Mar. 12-24	27.50-34.00	13.30	11.00	121.50	20.50	34.50	60.00	85.25
Mar. 9-11	27.50-33.00	13.30	11.00	121.50	20.50	34.50	60.00	85.25
Mar. 2-6	27.50-32.00	13.30	11.00	121.50	20.50	34.50	60.00	85.25
Apr. 1952 Avg.	24.50	18.723	19.50	121.50	19.00	49.077	56.50	88.00
Mar. 1953 Avg.	30.51	13.30	11.00	121.50	20.50	34.50	60.00	85.25
Feb. 1953 Avg.	25.136	13.30	11.431	121.50	20.50	34.50	60.00	85.25

NOTE: Copper: Electrolytic, del. Conn. Valley; Lead, common grade, del. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, del. New York; Aluminum primary ingots, 99%, del.; Antimony, bulk f.o.b. Laredo, Tex.; Nickel, electrolytic cathodes, 99.9% base sizes at refinery unpacked. Silver, open market, New York. Prices, cents per pound; except silver, cents per ounce.

The Metal Market

Price weakness continues to dominate nonferrous metals market. Much of the lethargy stems from depressed markets in London

PRICE WEAKNESS still dominates much of the market, in the throes of a psychological letdown.

Much of the trouble stems from unduly depressed London markets, where bears are in the saddle. Buyers are cautious and won't extend themselves while uncertainty continues. Producers know industry is using plenty of metal, but is only placing orders to take care of immediate needs. Depressants, once set in motion, tend to continue the vicious circle, making the picture darker than it really is.

Soft Ground—Lead and zinc, despite all their troubles, still haven't found firm footing. Tin hasn't come out of its nosedive yet. Copper prices can't stay in the clouds forever. Secondary copper is logically inching back to the primary price level and scrap prices are due for a tumble. Brass and bronze ingots slid off 1 to 6 cents a pound last week.

Not all the metals are on the skids. Aluminum, nickel, magnesium and a number of the minor metals are firm. Nickel will stay strong because of intense demand. Aluminum men have played a shrewd game by holding price steady under the demand avalanche, putting all their chips on a big-volume future. Magnesium people want to get more competitive but can't until volume is built. Conversely, they find it tough to build the necessary volume with the price where it is.

Happy Thoughts—One trend is emerging that will gladden fabricators' hearts. Metal merchants from here on in will have to go out and interest customers instead of sitting back and waiting for orders.

Inside Story on Tin

Here's the real reason for tin's sudden disintegration. The inside story has industry fuming and could well have political ramifications.

Several weeks ago the government decided to end tin stockpiling except for present purchase contracts, which run into 1955. Since the stockpile has absorbed excess production over the last few years, one of the biggest markets for the metal would be wiped out, and the artificially high price would certainly be undermined.

Instead of announcing the plan generally, the State department is reported to have told foreign tin producers only. With advantage of this inside knowledge and time, they immediately started selling short, knowing the market would break sharply when the government's plans were made public. Trade knew they couldn't lose, and heavy offerings pushed the price over the cliff and out of sight. It hasn't hit bottom.

Industry is said to have lost millions on the deal. U. S. buyers of tin, who were never overly fond of the government buying-selling setup, are enraged.

The U. S. stockpile contains an estimated 200,000 tons of metallic tin and concentrates today.

Copper Output Sets Records

March copper output set a number of new records. Crude output—99,932 tons—was highest since the war, according to Copper Institute figures. Secondary production as expected, shot skyward, the 17,719-ton output nearly doubling the February figure. Refined production hit 112,016 tons, up over 10,000 tons. Fabricators' deliveries amounted to 133,462 tons, a gain of 16,258 tons. Producers' stocks dipped 5000 tons to 55,807 tons. March stockpile take was about 6000 tons.

Brass, Bronze Ingots Down

Brass and bronze ingot makers slashed prices 1 to 6 cents last week, with the tin-containing 88-10-2 group in foreground. No. 115 grade is now 27.50, No. 225 (Navy G metal) 38.50, No. 245 (Navy M metal) 32.75, No. 305 is 32.00, No. 405 yellow brass is 22.75, and No. 421 is 27.50.

Bridgeport Plans Plant

Bridgeport Brass Co., Bridgeport, Conn., is planning construction of a new brass and copper tube processing plant on the Housatonic river in Connecticut. Cost is estimated by Herman W. Steinkrauss, president, at $4 million to $5 million. Possibility of a merger by Bridgeport was also hinted at by Mr. Steinkrauss. The company at present owns a 40 per cent interest in Noranda Mines Ltd., a Canadian copper company.

Lead Drops Again

Lead again succumbed to London weakness. Domestic prices fell a half-cent to 12.50 New York, lowest since August, 1950. Lead products and oxides followed suit. Full sheets and pipe are now quoted at 17.50 cents.

At the Lead Industries Association's annual meeting, most users of lead fortified products estimated that consumption would hold strong in 1953. Battery makers expect production to climb 7.5 per cent this year, using about 415,000 tons. Second biggest use is for tetraethyl lead, and 10 per cent more lead will be needed this year.

It's getting to be a habit each year for some one to tell the group's annual meeting that one of their markets is falling by the wayside. Last year it was linotype, this year cable sheathing.

Kaiser Mill in Full Stride

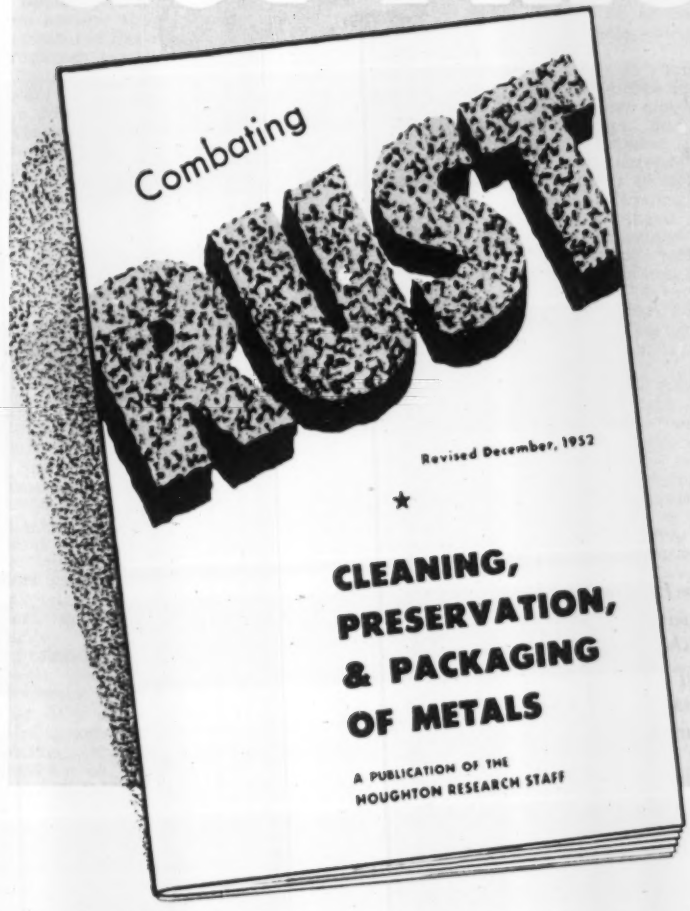
All Kaiser aluminum pig produced in the Northwest is now fabricated there. The company's Trentwood rolling mill at Spokane, Wash., hit full stride in March, turning out more than 15,000 tons of fabricated and semifabricated aluminum. A $5 million expansion program at Trentwood has stretched the plant's capacity 50 per cent from the original monthly rating of 10,000 tons. Because power shortage cut primary production of the Mead Works nearly 50 per cent for four months, nearly 40 per cent of the pig aluminum used had to be shipped from the new Chalmette, La., reduction works and other sources outside the Northwest. Backlog of unshipped orders at Trentwood is highest it has ever been, says Works Manager A. H. Branstad.

Uses Outstep Production

New applications of titanium to aircraft components are developing more rapidly than can be met by expanding production. The Air Force temporarily has discontinued its practice of allocating quantities of the metal to its air frame contractors to enable them to get acquainted with it.

In the meantime, contractors rapidly are getting accustomed to working titanium so that there may be no further need for "educational" allocations.

Get This Book



on RUST control

Chapter

I Corrosion, Causes and Prevention

II Cleaning
Types of Soil, Methods of Cleaning: Alkaline, Solvent, Emulsion, Acid Phosphate

III Preservation
Methods: Contact, Moisture Barrier, Strippable Compound, Dehydration. How to Choose and Test Preservatives

IV Houghton Rust Preventives
Types and applications

This valuable 72-page book was prepared by Houghton's Research Staff based on experience gained in Rust Control since 1869. It discusses each of the above topics fully and fairly. You can depend on its recommendations. Use the coupon below or write today for your copy of this authoritative book. E. F. Houghton & Co., 303 W. Lehigh Ave., Philadelphia 33, Pa.

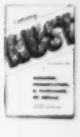
. . . products of

E. F. HOUGHTON & CO.
PHILADELPHIA · CHICAGO · DETROIT · SAN FRANCISCO

Ready to give you on-the-job service . . .

E. F. Houghton & Co.
303 W. Lehigh Avenue, Philadelphia 33, Pa.

Please send me a copy of "Combating Rust" at no cost or obligation to me.



NAME

FIRM

ADDRESS

CITY ZONE STATE

"... More than 6,000 of our employees are now participating ..."

MELVIN H. BAKER
Chairman of the Board, National Gypsum Company

"The Payroll Savings Plan for Bonds provides a convenient and profitable way for America's wage earners to save. Millions of Payroll Savers have become proud owners of homes purchased with Bonds bought this way. It also helps our national government with its problems of managing the public debt. We in National Gypsum urge the stimulation of the Payroll Savings Plan and are proud to report that more than 6,000 of our employees are now participating."

Here's another success story of a person-to-person canvass:

In the Wahoo (Nebraska) ordnance plant of the National Gypsum Company, employee participation in the Payroll Savings Plan was a very low 1.73%.

In September of last year, with the whole-hearted encouragement of top management, the 3,000 employees of Gypsum's Ordnance Plant organized to conduct a person-to-person canvass to put a Payroll Savings Application Blank in the hands of every employee.

90% of the employees signed up in the opening days of the campaign. By September 12th, employee participation was 93.7%. On October 2nd, participation was almost 97%—and still going up.

To quote from National Gypsum's printed report of the Payroll Savings campaign:

• "Did we use fancy charts! Did we use advertisements? Did we have long-winded meetings. Did we give prizes for production? The answer is No! We put the proposition squarely to the people, and we reported to the people once a week in bulletin form to let them know where they stood in relation to other departments as well as to the plant total. Once the spirit of competition and teamwork caught fire, once it became a matter of personal pride; a successful conclusion was only a matter of time and effort."

Justifiably proud of its sponsorship of the Payroll Savings Plan and the 97% enrollment of its employees, National Gypsum Company prepared a very interesting folder, "Bombs and Bonds for National Defense. The Savings Bond Program of the National Gypsum Company." Savings Bond Division, U. S. Treasury Department, Suite 706, Washington Building, Washington, D.C., will be glad to send you a copy. Read how easy it is to build *your* Payroll Plan to 90% or more participation.

The United States Government does not pay for this advertisement. It is donated by this publication in cooperation with the Advertising Council and the Magazine Publishers of America.

STEEL
The Weekly Magazine of Metalworking

Demand Pressure for Sheets Unabated

Mills booking orders for third quarter but anticipate substantial carryover tonnage. Some may blank out portion of period to care for overflow

Sheet and Strip Prices, Page 201 & 204

Boston Straight chromium stainless narrow strip is one of the most extended of flat-rolled products. Some producers are booked into September, automobile orders leading. Cold-rolled carbon strip July schedules are filling with more open-end tonnage available. Carbon sheet schedules are also filling for third quarter with some producers offering less volume, notably for July with carryovers a factor. Sheet-strip mills producing light plate need the capacity for normal sheet production, but return to sheet may be delayed due to recent losses in production of light plates by a leading producer.

New York Some sheet sellers in opening books for third quarter on commercial tonnage have virtually blanked out July. This is not only true in the case of hot and cold-rolled sheets but also in certain of the specialties, including enameling stock and electrical sheets.

One producer of a special zinc sheet reports arrearages, despite the fact that in the more common grades of galvanized sheets supply and demand appear in fair balance. Reflecting seasonal influences, demand from manufacturers of stamped sanitaryware and air conditioning equipment is being stepped up appreciably.

Philadelphia Hot and cold-rolled sheets remain in tight supply with producers confronting more demand than they can handle for as far into third quarter as they care to accept tonnage. Certain mills are virtually blanking out July in anticipation of substantial carryover at the end of this quarter.

Despite the strong outlook for third quarter, the trade is somewhat puzzled. Automotive demand is admittedly the key to high level activity in sheets over the next several months. Reports out of Detroit remain highly optimistic, and the policy of leading automakers in lining up all the tonnage they can get, including no little premium steel for acceptance in third quarter as well as currently, appears to support this optimism.

Nevertheless, new cars in this district at least do not appear to be moving too well, and as for the used car market there has been an appreciable lag for some time past. The situation boils down to the question — Will makers be able to sell all the cars they are building? Car sales in May and June may provide the answer.

Pittsburgh Allocations for third quarter are not out, but strong demand is predicted for the period. The military is expected to make a strong bid for tonnage although not to the extent it will seriously affect availability for other sheet consumers. A big factor will be automotive demand.

Cleveland Sheetmakers anticipate no letdown in pressure for tonnage until fourth quarter at earliest, unless there are wholesale cutbacks in defense production.

Demand pressure is unusually strong from the automotive industry. Appliance manufacturers also are actively seeking tonnage, and warehouse demand is insatiable. Meanwhile, military and defense needs show no sign of letdown though some sellers anticipate a slackening should a Korean peace be arranged.

Indicative of the unusually pressing demand for hot and cold-rolled sheets, premium price sellers are reported obtaining up to 16 cents per pound for prompt shipment tonnage. Not much is moving at this price but what little is being taken, is considered significant.

Galvanized sheets, which have been in plentiful supply for some time past, are moving a little more actively, reflecting seasonal pickup in demand. Instances are reported where consumers, desperate for plain sheets, have purchased galvanized and decoated them.

Cincinnati Consumers give every indication they will be ordering as much sheet and strip tonnage for third quarter as in second quarter.

St. Louis — Sheetmakers have opened third quarter books, but supply will be limited by Granite City Steel Co.'s decision to shut down for parts of July and August for changeover to new rolling equipment.

Los Angeles With more than 60 to 90 days arrearages, Kaiser Steel Corp. opened third quarter sheet order books. Demand is strong for all flat-rolled products except galvanized which is sluggish.

Index of Prices

Bars	200 & 201
Clad Steels	205
Coal Chemicals	194
Coke	194
Comparison of Prices	180
Composite Market Averages	180
Electrodes	205
Fasteners	205
Ferroalloys	196
Fluorspar	194
Metal Powders	205
Nonferrous Metals	181
Ores	194
Pig Iron	180
Plates	200
Rails	204
Refractories	194
Scrap	208
Semifinished Steel Products	200
Sheets	201
Stainless Steel	205
Strip	201 & 204
Structurals	200
Tin Mill Products	201
Tool Steels	204
Track Materials	204
Tubular Goods	205
Warehouse Steel Products	186
Wire & Wire Products	204

Fasteners . . .

Bolt, Nut, Rivet Prices, Page 205

Cleveland New bolt, nut and rivet discount lists are being published by the various producers incorporating advances of from 2 to 5 per cent. The upward movement was initiated a week or so ago in a move at bringing prices into line with production costs.

In the case of rivets some makers are quoting small rivets at 30 per

(Turn to page 186)

Steel Output Sets Monthly Record in March

MARCH, 1953, goes into the record books as the period of the greatest monthly steel output in history. A total of 10,153,000 net tons of ingots and steel for castings was poured.

The first quarter's production, 28,981,137 net tons, outweighed last year's first quarter output, 27,197,518 net tons, by 6.6 per cent, despite a slightly lower operating rate for the first quarter of 1953. The difference is explained by steelmaking capacity which has been added since the first of last year. Continued increases in capacity are also reflected in the 256,000-net-ton margin in March, 1953, over the record January, 1953, output.

American Iron & Steel Institute says the steel made in the first 10-million-ton month (March, 1953) would yield almost twice as much in finished steel products as was shipped to makers of guns, tanks, ammunition and associated products during the years 1951 and 1952 combined. Those shipments were about 3.3 million net tons, mostly in products having a low yield from ingots.

Other production figures follow.

	OPEN-HEARTH		BESSEMER		ELECTRIC		TOTAL		Calculated weekly production (net tons)	No. of weeks in mo.
	Net tons	% of capacity	Net tons	% of capacity	Net tons	% of capacity	Net tons	% of capacity		
1953										
January	8,841,679	101.4	350,200	88.9	704,748	81.1	9,896,627	99.1	2,234,002	4.43
February	7,939,299	100.8	329,389	92.6	662,822	84.4	8,931,510	99.0	2,232,877	4.00
†March	9,036,000	103.6	355,000	90.1	762,000	87.6	10,153,000	101.7	2,292,000	4.43
†1st Qtr.	25,816,978	101.9	1,034,589	90.5	2,129,570	84.4	28,981,137	100.0	2,253,588	12.86
1952										
March	8,401,140	104.4	378,861	83.1	624,190	89.5	9,404,191	102.2	2,122,842	4.43
1st Qtr.	24,207,329	102.5	1,168,871	87.4	1,821,318	89.0	27,197,518	100.7	2,092,117	13.00

Note—The percentages of capacity in 1953 are calculated on weekly capacities of 1,969,275 net tons open hearth, 88,934 net tons bessemer and 196,250 net tons electric ingots and steel for castings, total 2,254,459 net tons; based on annual capacities as of Jan. 1, 1953, as follows: Open-hearth 102,677,980 net tons, bessemer 4,637,000 net tons, electric 10,232,490 net tons, total 117,547,470 net tons. The percentages of capacity operated in 1952 are calculated on weekly capacities of 1,816,637 net tons open-hearth, 102,926 net tons bessemer and 157,477 net tons electric ingots and steel for castings, total 2,077,040 net tons; based on annual capacities as of Jan. 1, 1952, as follows: Open-hearth 94,973,780 net tons; bessemer 5,381,000 net tons; electric 8,232,890 net tons; total 108,587,670 net tons.

† Preliminary figures, subject to revision

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except: New York, 30 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, San Francisco, St. Paul, 15 cents.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	H.R. 18 Ga., Heavier*	C.R.	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††§		Carbon	Floor
Baltimore	5.81	7.17	8.27	6.42	...	6.41	7.18	11.27	6.47	6.47	7.70
Boston	6.51	7.35	8.39	6.55	...	6.42	7.49	12.37	6.56	6.80	7.98
Buffalo	5.80	6.65	8.31	6.21	...	5.90	6.95	11.07	6.08	6.30	7.67
Birmingham	5.80	6.65	7.70¶	5.80	...	5.80	7.85	...	5.95	6.10	8.15
Chicago	5.80	6.65	7.90	5.83	...	5.83	6.80	10.65	5.95	6.00	7.18
Cincinnati	6.13	6.72	8.21	6.14	...	6.13	7.16	10.97	6.42	6.47	7.60
Cleveland	5.80	6.65	8.04	6.00	...	5.89	6.90	10.79	6.28	6.17	7.51
Detroit	6.23	6.46	8.44	6.08	7.495	6.12	7.10	10.92	6.42	6.47	7.52
Houston	6.74	...	8.67	6.89	...	6.98	...	...	6.82	6.78	8.18
Jersey City, N.J.	6.26	7.27	8.32	6.56	...	6.59	7.53	9.54	6.39	6.60	8.01
Los Angeles	6.60	8.45	9.50	6.75	11.20	6.60	8.65	12.05	6.60	6.70	8.90
Milwaukee	5.97	6.82	8.07	6.00	...	6.00	7.07	10.82	6.12	6.17	7.35
Moline, Ill.	6.16	7.00	8.30	6.19	...	6.18	6.91	...	6.30	6.30	...
New York	6.26	7.37	8.32	6.56	...	6.69	7.63	11.14	6.49	6.70	8.11
Norfolk, Va.	7.60	...	...	....	...	6.44	8.70	...	7.25	6.64	7.33
Philadelphia	6.16	7.18	7.70	6.50	8.30	6.47	7.50	10.89	6.22	6.29	7.42
Pittsburgh	5.80	6.65	7.90	5.97	...	5.83	6.90	10.65	5.95	6.00	7.18
Portland, Oreg.	7.80	9.05	9.75	7.60	...	7.35	9.40	...	7.30	7.30	9.25
Richmond, Va.	6.14	6.95	8.68	6.53	...	6.30	7.63	...	6.58	6.68	7.80
St. Louis	6.10	6.94	8.20	6.14	...	6.13	7.20	10.95	6.35	6.35	7.58
St. Paul	6.47	7.31	8.61	6.50	...	6.49	7.32	...	6.61	6.61	7.84
San Francisco	6.85	8.15	9.45	6.70	...	6.60	8.65	12.00	6.45	6.70	8.85
Seattle-Tacoma	7.36	8.24	9.40	7.40	...	7.08	9.37	12.00	6.83	7.19	9.10
Spokane (city)	7.80	9.40	10.15	7.15	...	7.10	9.70	11.90	7.00	7.10	9.15
Washington	6.31	7.61	8.90	6.89	...	6.90	8.03	...	6.93	6.95	8.17

Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes 25-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; cold-finished bars, 2000 lb and over; *—500 to 1499 lb; §—1000 to 1999 lb.

(*Concluded from page* 185)

cent off the standard list. Others, however, are quoting 40 per cent off based on a 1000 piece order unit. It is understood those makers following the old pricing policy are considering a change to the 1000 piece policy, but since a number of changes in manufacturing and packaging departments are required it will be some time before the practice is uniformly observed in the industry.

Warehouse . . .

Warehouse Prices, Page 186

Boston—District warehouses are gradually getting into better inventory balance. Stocks of a fewer number of products are short, carbon sheets, heavy wide plates and wide flanged beams being exceptions. Some distributors have curtailed their ordering of products in balanced supply, including galvanized sheets, smaller cold-finished bars, larger alloy bars and light strip mill plates. Demand from normal warehouse buyers is running slightly ahead of last year.

New York—Warehouses distributing specialties are building inventories faster than general line industrial distributors. The latter are hampered by lack of heavier sizes in plates, bars and structurals. Specialty warehouses in some cases have built up stocks to better than 65 per cent of normal. Since decontrol of prices, some producers have acquired more nickel scrap, slightly improving supply of nickel-bearing bars.

Philadelphia—Warehouse volume is well sustained with orders smaller on the average, but more numerous. One leading distributor reports business so far this month, on a dollar basis, as being fully comparable with that of a year ago, as well as with that of last month. Hot and cold-rolled sheets, shapes, bars and plates are moving actively. Galvanized sheets are in a little better demand, but they are in plentiful supply.

Pittsburgh—Product balance seems distant to warehouse operators in this district. For the present, there is little likelihood of accumulating much inventory on large diameter bars and hot and cold-rolled sheets. Receipts of cold-rolled sheets have improved, but they are matched by stronger demand. Hot-rolled sheets can be sold as quickly as obtained. One warehouse sold a shipment from its branch in the South at the usual price plus transportation. Heating and air conditioning contractors are confronted with new union demands and seem to be willing to ride out the storm. As a result, galvanized sheets are less actively sought. Over-all, warehouses look for strong second and third quarters.

Cleveland—Slight slackening in order volume was reported by several warehouses here last week. Over-all demand, however, continues strong, especially for those items which are in tight supply.

Distributors' inventories have been improving steadily for some time past, but recent production suspensions at certain mills in Pittsburgh and Youngstown due to labor trouble have resulted in a slowing down in receipts the past couple weeks. It will take some time to make up this lost tonnage. Meanwhile, warehouse stocks continue unbalanced with hot and cold-rolled sheets in unusually short supply.

Large size bars, heavy plates and structurals also are tight. Supply conditions in sheets are described as very severe with reports circulating of cold-rolled sheets being moved by premium price sellers at 12 cents to 16 cents per pound.

Cincinnati—Demand is as brisk as ever. Distributors are predicting that a number of consumers are going to be disappointed after the Controlled Materials Plan expires as the demand is going to be great. Mills are reporting third quarter tonnage is sold out. The warehouses have been unable to build up stocks.

Los Angeles—Warehouse sales are steady at the March level. Steel is moving from producers to distributors in greater tonnage, raising inventories to as much as 75 to 80 per cent of normal.

San Francisco—Heavy demands are being made on warehouses for structurals, plates, light gage tubing, seamless tubing and large diameter rounds. On the other hand, demand has softened for welded pipe and galvanized sheets.

Seattle—Warehouse sales volume is satisfactory, demand continuing strong. If the strike at metalworking plants in this area is prolonged, however, warehouses will suffer. Plates and sheets are critically short, and heat-treated alloy steel also is tight.

Reinforcing Bars . . .

Reinforcing Bar Prices, Page 200

Boston—Bulk of large outstanding reinforcing tonnages has been placed. Less tonnage is being estimated, but outstanding are several thousand tons for Westover Field and the Boston Terminal Market. Bridge estimating is slow. Distributors have a heavier volume of bars and inventories in general are improved.

Seattle—Capacity production of reinforcing bars is reported by district rolling mills. Order backlogs are down but considerable construction is up for bidding and sizable steel awards are expected soon.

Take some of the pressure off hydraulic press maintenance with

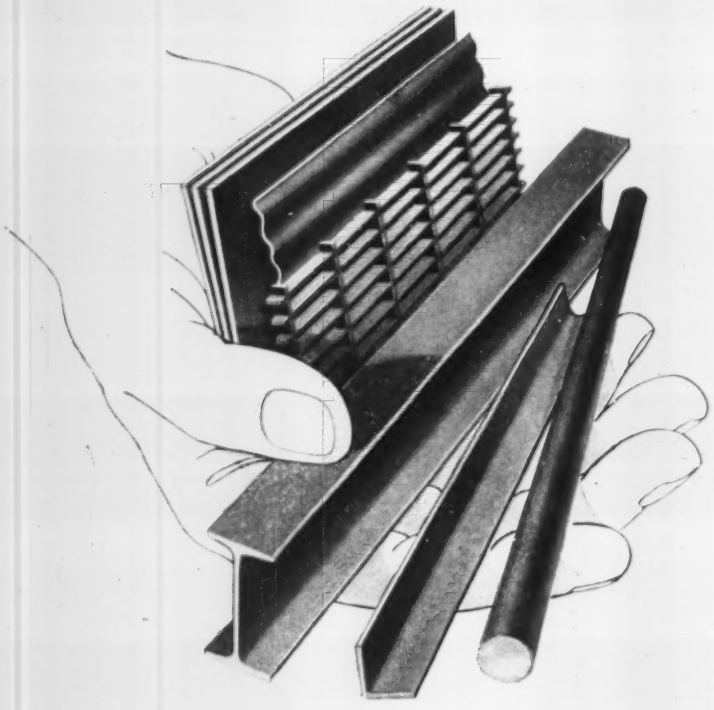
GULF QUALITY HYDRAULIC OILS

A recent investigation into the causes of down time of hydraulic equipment revealed that an estimated 90% of all down time can be traced to the condition of the hydraulic oil. This is right down our alley because we at Gulf know from experience in hundreds of plants that it pays to use only top quality oils in hydraulic systems—oils that will not sludge, and that protect against rust. Saving a few cents per gallon on the initial fill is false economy!

For complete information on Gulf's line of quality hydraulic oils, ask a Gulf Sales Engineer to call. Write, wire, or phone your nearest Gulf office today.

GULF SERVES INDUSTRY

Gulf Oil Corporation · Gulf Refining Company
Pittsburgh 30, Pa.



Always on hand

Levinson's complete stock means that in any kind of market you have a better chance of getting the steel you want — and faster!

We carry in stock at all times, for immediate delivery to you, a varied inventory of structurals, plates, sheets, hot rolled and cold finished bars, corrugated steel and aluminum roofing and siding, open steel flooring.

Besides all that, Levinson carries a full line of aluminum sheet, rod and tubing, steel and aluminum windows, welding electrodes and equipment, expanded metal and the exciting new Alsynite translucent panels.

In addition, we have on hand the finest brand of quick deliveries, personalized service and good old-fashioned courtesy that you ever saw! For everything that a metal distributor should have for you — call Levinson.

BEAMS
ANGLES
PLATES
CHANNELS
BARS
GRATING

Alsynite and other building products

Levinson
STEEL SALES COMPANY
PITTSBURGH, PA.—South 20th and Wharton Sts.
GALION, OHIO—387 South Market St.

LSS-33

Steel Bars . . .

Bar Prices, Page 200 & 201

Cleveland Anticipated third quarter increase in large bar requirements on shell account is seen as eliminating any possibility of increased supplies soon for commercial customers. Investigation of the alleged munitions shortage in Korea is expected to result in stepped-up pressure on the mills over the remainder of the year unless a truce is arranged which would make a cutback or stretchout possible.

Small sizes are increasingly plentiful, but large sizes such as hexagons 1 1/16 inch, are described as worth their weight in gold they are so scarce. One bolt and nut maker here was informed last week by its mill source that delivery on an order placed for first quarter shipment will not be forthcoming until some time in third quarter.

Boston Heavy bars in all grades are under pressure but commercial demand for third quarter is not as urgent. Military tonnage accounts for sizable volume, including small sizes and alloys, for armament. Cold-finished carbon bars in the smaller sizes are easing with both warehouses and consumers. Converters of cold-finished are confronted with allotments covering only higher military orders in third quarter.

New York Most bar sellers are anticipating a strong market in the third quarter, especially should shell steel requirements expand as indicated. This shell work will affect particularly the larger sizes of hot carbon and also the medium sizes of cold-drawn bars, such as are needed for fuses.

Philadelphia Prospect for still heavier military set-asides in the third quarter points to continued stringency in large bar rounds for commercial work; also to a tighter situation than contemplated in cold-drawn bars required for shell fuses. Meanwhile, the supply outlook continues promising in most of the smaller sizes of hot carbon bars. Drop forgers are pressing hard for hot top quality steel up to 2½ inches.

Pittsburgh Demand for large and small diameter bars currently is strong. The shell program, calling principally for larger diameters, is showing renewed strength, and for the smaller diameter bars, warehouses, fabricators, and bolt and nut makers are trying to build stocks.

Cincinnati Warehouses have numerous holes in their alloy bar inventories. Stock is not coming in as fast as desired. The machine tool industry is not ordering so heavily but other consumers have taken up this slack so that demand has remained steady. Consumers of carbon bars can't get what they want.

Chicago The intense pressure for bars, cold-finished as well as hot-rolled, from automobile builders combine with military requirements to produce a tightness in supply that extends solidly through third quarter. Civilian goods manufacturers, it is indicated, will remain under quotas indefinitely. Easing of pressure seemingly depends upon some scaling down of tonnage going into new automobiles.

for 38 Years . . .

Industry has come here for the finest in surface treatments of metals

Want a more durable, more attractive paint finish on your metal product . . . to cold form metal more efficiently, more economically . . . to protect iron and steel parts from rust . . . to assure smooth break-in and long service on friction parts?

Parker Rust Proof has products which will produce these benefits for you. Bonderite anchors paint to metal. Bonderite and Bonderlube are helping to revolutionize cold forming. Parco Compound controls rust. Parco Lubrite retards wear. They're all *proven* products, easy to use, dependable, uniform in results.

Back of every Parker product and its performance in your plant is our thorough knowledge and wide experience in surface treatments for metals. All we've learned in 38 years goes to work for you when you *call on Parker.*

Since 1915— leader in the field

PARKER ***RUST PROOF COMPANY***
2158 *E. Milwaukee, Detroit 11, Michigan*

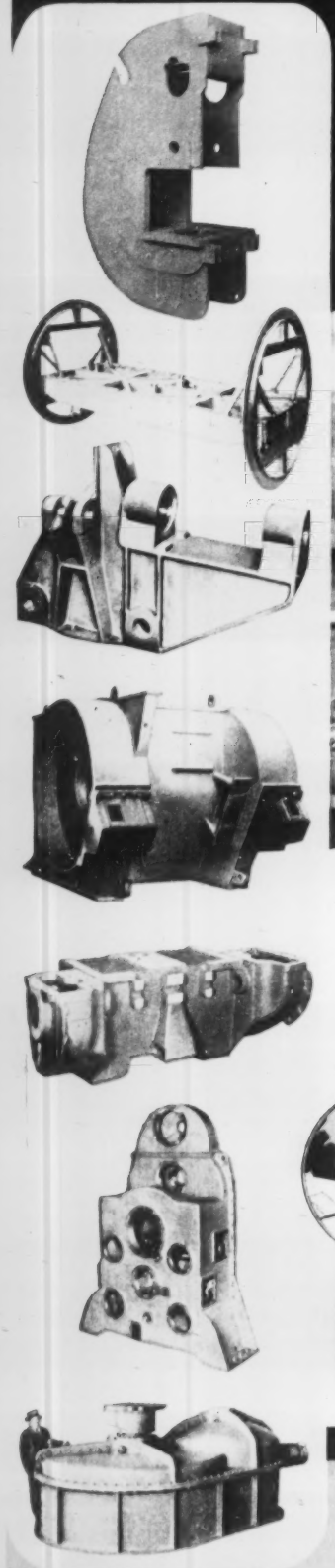
BONDERITE
corrosion resistant paint base

BONDERITE and BONDERLUBE
aids in cold forming of metals

PARCO COMPOUND
rust resistant

PARCO LUBRITE
wear resistant for friction surfaces

Steel-Weld FABRICATION



In the illustration above you see a portion of the Mahon machine shop where welded steel parts and assemblies of various sizes and weights are machined to specification for many industries throughout the country. Facilities are available right in the Mahon plant to do the complete job from the drawing board to finished machining ready for assembly. If you have parts or assemblies that can be redesigned and produced to better advantage through Steel-Weld Fabrication, or, if you are faced with a production problem involving large heavy pieces in which pattern costs are a consideration, you can turn to Mahon with complete confidence. You will find in the Mahon organization a unique source with complete, modern fabricating, machining and handling equipment to cope with any type of work regardless of size or weight . . . a source where skillful designing and advanced fabricating technique are supplemented by craftsmanship which assures you a smoother, finer appearing job embodying every advantage of Steel-Weld Fabrication. See Mahon's Insert in Sweet's Product Design File, or write for further information.

THE R. C. MAHON COMPANY

DETROIT 34, MICHIGAN

Engineers and Fabricators of Steel in Any Form for Any Purpose

MAHON

Plates . . .

Plate Prices, Page 200

Philadelphia — One district plate mill, which for some time has been lagging well behind schedule due to the installation of new equipment and difficulties attending attainment of efficient operation, expects to become current with orders by the end of May. Only recently it opened books for June.

Some customers have been able to pick up tonnage from other sources but the mill has had no difficulty rounding out schedules. In fact, it could dispose of much more tonnage if it were in position to handle it.

A further squeeze on plate supply has resulted from labor difficulties of the leading Pittsburrgh producer and continued suspension of one of its open-hearth departments, which in the past supplied considerable steel for plates. This interest only last week was able to open books on commercial work for third quarter, and then only on a rather limited basis.

Boston — Distribution of plates for third quarter is being revised as result of the loss of tonnage by a leading Pittsburgh district producer. This mill will have difficulty meeting its third quarter commitments. Some other mills are assuming part of the volume, but the production loss is not entirely made up because of the reluctance of distant producers to return to this market. Also, because of possible over-selling on the part of one or two mills the pinch will be especially acute in wide and heavy plates with possibly some tightening in light and narrow plates which, of late, have shown signs of getting into balance with demand.

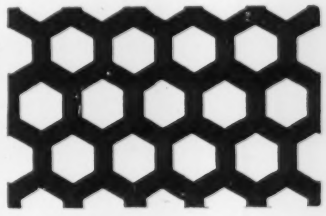
New York — All eastern plate mills, except one, are accepting commercial tonnage for delivery in third quarter. The exception is a mill that has been installing new equipment and is only now beginning to get caught up with arrearages. Most producers will have little capacity available for new civilian tonnage in July. Thereafter they should be fairly current, although indications point to brisk demand throughout third quarter.

Pittsburgh — Demand is slackening slightly for lighter gage plates. Military tonnage is being booked for third quarter and regular civilian orders are expected to be considered in about two weeks. Producers are awaiting official word on military set-asides. From all indications they will be the same as in second quarter, but civilian deliveries will be on a more current basis. One reason for this is the lag in car building in second quarter. Car builders are currently quoting on deliveries for that time. No car shops are closing for lack of material. Mainly they are working one shift. They lack orders, a condition which is expected to be rectified during third quarter.

Los Angeles — While plates are more abundant at the distributor level, fabricators who buy plate and skelp in mill quantities, say they are getting only 50 per cent of flat-rolled needed.

Seattle — Large tonnages of plates for Atomic Energy Commission projects at Arco, Idaho, are reported

Combines Beauty and BRAWN



Hendrick Perforated Metal

Hendrick Perforated Metal gives added beauty, strength and utility to products — makes them look better and sell faster!

Available in several hundred eye-appealing designs in commercially rolled metals and gauges with round, square, diamond, hexagonal or slotted perforations. Hendrick Perforated Metal can also be supplied in a combination of plain panel and perforation. For more complete information write to Hendrick direct!

Hendrick
MANUFACTURING COMPANY

30 DUNDAFF ST., CARBONDALE, PA. • Sales Offices In Principal Cities

Perforated Metal • Perforated Metal Screens • Wedge Slot Screens • Architectural Grilles • Mitco Open Steel Flooring • Shur-Site Treads • Armorgrids

"READING" CRANE'S accurate spotting speeds handling of heavy loads...

To reduce handling costs and improve production, a fast, efficient 5-ton "Reading" electric crane replaced the slow-moving hoist formerly installed in the plant pictured here. This "Reading" double I-beam, floor-operated crane has a traveling speed of 150 feet per minute—and a 22' lift.

Used to lower heavy domes on their heat treating furnaces, the new crane turns a tedious, costly handling job into a swift "push-button" operation. Worker fatigue is lessened. Shutdown time is reduced. Load handling costs are cut to the bone.

Find out how "Reading" Electric Cranes are "job tailored" to fit your requirements at no extra cost. Write for our latest 16-page bulletin, "The Why and How of Faster Production".

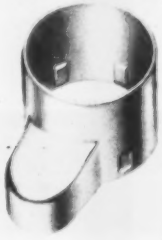
READING CRANE & HOIST CORP. • 2102 ADAMS STREET, READING, PA.

Chain Hoists
Electric Hoists
Overhead Traveling Cranes

READING CRANES

"It is more important to anticipate your problems than to meet them as they come."

— Martin Vanbee



Worcester Stamped Metal has been helping users of industrial stampings since 1883 to anticipate and avoid metalworking problems . . . especially in the shaping and deep drawing of component parts to accurate specifications.

Today, a complete stamping service — from tool design and die making to the scheduled production of over 100 presses, of small and large capacity — offers diversified facilities, in addition to 70 years of fabricating experience. Why not let us help you? Send blueprints or samples of your next job.

WORCESTER STAMPED METAL ©

WORCESTER STAMPED METAL Company

10 HUNT ST., WORCESTER, MASS., U. S. A.

SPECIALISTS IN SKILLED STAMPING SERVICE

Why Lift Extra Tonnage?

Walker Lifting Magnet operates with valuable saving of electrical energy . . . high ratio lifting magnet gives maximum lifting with minimum weight. Walker's advanced design insures more payload per lift . . . gets into corners . . . reduces supplementary hand work.

LESS WEIGHT — MORE POWER!

O. S. WALKER CO. Inc.

WORCESTER 6, MASSACHUSETTS

placed with an unstated Phoenix, Ariz., firm by Utah Construction Co., general contractor.

Tin Plate . . .

Tin Plate Prices, Page 201

Pittsburgh — Tin plate producers expect strong demand throughout second quarter. The market is stronger than it was two months ago. Third quarter prospects are promising. Full order books are expected barring unexpected setbacks in early crops. Producers are showing interest in marketing fresh milk in cans, which now is being done for commercial purposes on the West Coast. In Wisconsin six ounce cans of fresh milk are being turned out for vending machines in the New York city area. The military is a prospective large user of canned fresh milk.

Wire . . .

Wire Prices, Page 204

Boston Upholstery spring wire orders extend into third quarter. Users of cold-heading wire have used up all second quarter tickets and are looking for additional open-end tonnage for June to improve inventories. For further conversion after June 30, reduced rod allocations will cover higher rated military defense, balance being mill allotments.

Fully 90 per cent of wire consumers will be down one or two weeks in July, some co-ordinating with mill suspensions for vacations. This combined, with undetermined carry-over for some wire products, will mean lower July shipments.

Soft spots in wire schedules include fine wire specialties, and rope wire.

New York Depending on the product, demand for finished wire is spotty. Heaviest buying is by the automobile industry, valve spring and upholstery grades. Some orders have been booked beyond July. There are scattered openings, mostly finer specialties, for late second quarter. Rope wire is slow, but several suspension bridge projects account for large tonnages.

Philadelphia — Business in nails and merchant wire is picking up, reflecting seasonal influences. No scarcity is developing, nor are there any indications of such in the market. But there is an upturn in the movement of these items which have been moving sluggishly for months. Trading in manufacturers wire is sustained at high level.

Cleveland — Some improvement in demand for merchant wire products is reported, reflecting largely seasonal pickup after several months of comparatively sluggish movement. Farm needs are expanding and building activities are increasing. Manufacturers wire continues to move at active pace and no letdown is in sight into third quarter.

Seattle Federal Supply Service is purchasing seasonal requirements for various agencies. Recent placements include 80 tons of barbed wire, divided between Bethlehem Steel Co. and Columbia-Geneva Steel Division of U. S. Steel Corp.

10-year foundation for customer-attracting finishes...

Beverage cooler manufactured by Mundeam Mfg. Co., Columbus, Ohio, using Republic Electro Paintlok Sheets for the enamel-finished exterior and the natural-finish inner liner. Trim is Republic Enduro Stainless Steel.

Republic

ELECTRO PAINTLOK SHEETS

The makers of this beverage cooler estimate that its bright red finish still will be pulling in customers after 10 years of service, outdoors or in.

The body and inside liner of the cabinet are Republic Electro Paintlok . . . the zinc-coated steel sheet that is chemically treated to *take* paints, lacquers, and synthetic enamels *smoothly* . . . and *hold* them for years, even under hard service and severe exposure.

What's more . . . the tight zinc coat helps protect the steel and the enameled finish from creeping rust and corrosion even if the painted surface should be scratched.

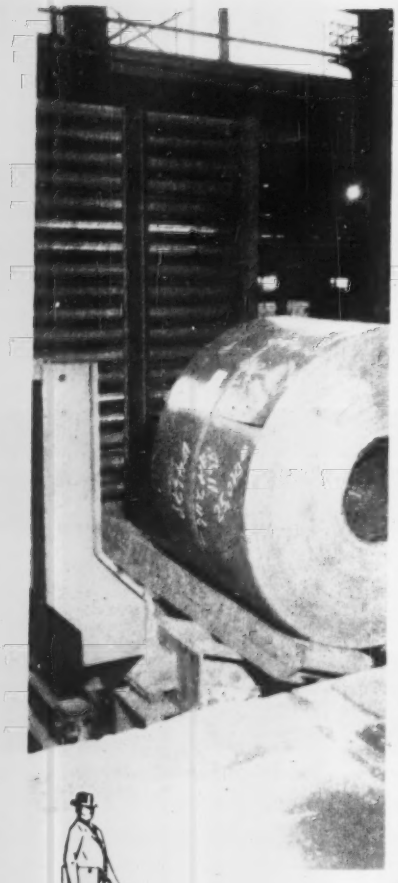
When you receive Republic Electro Paintlok Sheets, they are ready to paint after a simple cleaning to remove shipping grime. Even after drawing to shape, these sheets require only degreasing before painting. The zinc coating clings tight, is not cracked or peeled by normal fabrication procedures.

Get all the facts on Republic Electro Paintlok Sheets for your fabricated steel products that need to look better longer. Ask for Booklet 525.

REPUBLIC STEEL CORPORATION
GENERAL OFFICES, CLEVELAND 1, OHIO
Export Department:
Chrysler Building, New York 17, N. Y.

Republic
REPUBLIC STEEL
ELECTRO ZINC PLATED SHEETS
Electro Paintlok · Electro Zincbond

Other Republic Products include Carbon, Alloy and Stainless Steels — Sheets, Strip, Plates, Bars, Pipe, Tubing, Bolts and Nuts, Wire



THE MATHEWS ENGINEER BRINGS YOU 47 YEARS OF EXPERIENCE IN MECHANIZED HANDLING

Modern conveyer system work is a highly-specialized field . . . one in which there is no substitute for experience.

When you consult the Mathews engineer you get the benefit of experience, plus engineering resources and production facilities of three modern plants.

To get a greater return on your conveyer investment, better design, more efficient performance, longer service, call your nearest Mathews representative. Write for complete information.

MATHEWS CONVEYER COMPANY

GENERAL OFFICES
Mathews Conveyer Company . Ellwood City, Penna.

PACIFIC COAST DIVISION
Mathews Conveyer Company West Coast San Carlos, California

CANADIAN DIVISION
Mathews Conveyer Company, Ltd., Port Hope, Ont.

ORES–COKE–REFRACTORIES

Prices as reported to STEEL; changes shown in italic.

ORES

Lake Superior Iron Ore

(Prices effective for ore delivered up to and including June 30, 1953; gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Old range bessemer	$10.10
Old range nonbessemer	9.95
Mesabi bessemer	9.85
Mesabi nonbessemer	9.70
Open-hearth lump	10.95
High phosphorus	9.70

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon, which were in effect on Dec. 31, 1952, and increases or decreases after such date for buyer's account.

Eastern Local Iron Ore

Cents per unit del. E. Pa.

Foundry and basic 59-62% concentrates contract	17.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	22.00
North African hematites (spot)	26.00-28.00
Brazilian iron ore, 68-69% (spot)	25.00

Tungsten Ore

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$65.00
Domestic scheelite, mines	65.00

Manganese Ore

Manganese, 48% nearby, $1.18-1.21 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 90c-93c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland Oreg., or Tacoma, Wash.

Indian and African	
48% 2.8:1	$40.00-$42.00
48% 3:1	44.00-46.00
48% no ratio	32.00-34.00
South African Transvaal	
44% no ratio	$27.00-$28.00
48% no ratio	34.00-35.00
Brazilian	
44% 2.5:1 lump	nom. $32
Domestic (Mail nearest seller)	
48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb. molybdenum content, mines	$1.00

REFRACTORIES

Fire Clay Brick

High-Heat Duty: Pueblo, Colo., $89.00; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lochhaven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O.; Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., $99.30; Salina, Pa., $104.55; Niles, O., $109; Los Angeles, Pittsburg, Calif., $132.30.

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $99.30; Hays, Pa., $105.10; Niles, O., $107; E. Chicago, Ind., Joliet, Rockdale, Ill., $109.70; Cutler, Utah, $116.55; Los Angeles, $122.85.

Insulating Fire Brick

2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $179.55; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $186.90.

Ladle Brick

Dry Pressed: Bessemer, Ala., $61.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wellsville, O., $69.30; Mexico, Mo., $73.50; Clearfield, Pa., Portsmouth, O., $83; Perla, Ark., $92.40; Los Angeles, $110.25; Pittsburg, Calif., $111.30.

Sleeves

Reesdale, Pa., $127; Johnstown, Pa., $127.30; Clearfield, Pa., $135; St. Louis, $138; Athens, Tex., $140.90.

Nozzles

Reesdale, Pa., $203.20; Johnstown, Pa., $208.40; Clearfield, Pa., $219.45; St. Louis, $224.65; Athens, Tex., $225.20.

Runners

Reesdale, Pa., $158.20; Johnstown, Pa., $161.70; Clearfield, Pa., $168.60; St. Louis, $170.30; Athens, Tex., $174.40.

High-Alumina Brick

50 Per Cent: Clearfield, Pa., St. Louis, Mexico, Mo., $166.30; Danville, Ill., $169.30.

60 Per Cent: St. Louis, Mexico, Vandalia, Mo., $210.20; Danville, Ill., $213.20.

70 Per Cent: St. Louis, Mexico, Vandalia, Mo., $244.85; Danville, Ill., $247.85; Clearfield, Pa., $252.

METALLURGICAL COKE

Price per net ton

Beehive Ovens

Connellsville fur.	$14.50-15.00
Connellsville fdry	16.50-17.50
New River foundry	20.80
Wise county foundry	15.95
Wise county, furnace	15.20

Oven Foundry Coke

Kearney, N. J., ovens	$24.00
Everett, Mass., ovens New England, del.	*26.05
Chicago ovens	24.50
Chicago, del.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Chicago, del.	28.12
Cincinnati, del.	25.85
Painesville, O., ovens	25.50
Cleveland, del.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	21.65
Cincinnati, del.	26.58
LoneStar,Tex., ovens	18.50
Philadelphia, ovens	23.95
Swedeland, Pa., ovens	23.85
St. Louis, ovens	
St. Louis, del.	26.00
Portsmouth, O., ovens	24.00
Cincinnati, del.	26.62
Detroit, ovens	25.50
Detroit, del.	26.50
Buffalo, del.	28.08
Flint, del.	28.23
Pontiac, del.	27.06
Saginaw, del.	28.58

*For within $4.55 freight zone from works.

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol	36.00
Toluol, one deg.	30.00-33.00
Industrial xylol	30.00-33.50

Per ton, bulk, ovens

Sulphate of ammonia	$44.45
Birmingham area	$49.50

Cents per pound, ovens

Phenol, 40 carlots, nonreturnable drums	17.25

FLUORSPAR

Metallurgical grade, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 70%, $43; 60%, $40.

Imported, net ton, duty paid, metallurgical grade, $30-$35.

you cut costs—
improve your products
with
pre-coated
Thomas Strip

Costs go down—product quality goes up, when you use Thomas *pre-coated* strip in stamping and drawing light-metal parts. Savings show up in almost every direction.

It has a clean, smooth-surface finish which eliminates the cost of preparation before fabrication. In many instances, all that is necessary is to fabricate and assemble, as cleaning, plating, and buffing operations are not necessary. Often the tightly adhering, non-ferrous coating serves as the final finish. The coating also acts as a die lubricant, increases die life, reduces wear and cuts re-tooling costs. It protects the base metal during manufacturing processes.

In addition to these many cost saving advantages, *pre-coated* Thomas Strip improves products by providing a uniform finish on products inside and out. It adds substantially to product life and appearance, at low cost.

To lower operating costs and increase product acceptance use *pre-coated* Thomas Strip. For assistance in selecting the most desirable coating for your products from the wide variety listed below, write today.

Cold-rolled strip steel electrolytically pre-coated with Zinc, Copper, Brass, Nickel, Lead-Alloy and Chromium in Natural, Planished and Buffed Finished—Hot Dip Tin and Lead Alloy Coated—Lacquer Coated in Colors—Annealed Spring Steel—Alloy Strip Steel—Uncoated Strip Steel. Carefully produced to your specifications.

Thomas Strip

a product of

Pittsburgh Steel Company

Thomas Strip Division · Warren, Ohio

CURRENT FERROALLOY QUOTATIONS

Prices as reported to STEEL; changes shown in italic

MANGANESE ALLOYS

Spiegeleisen: (19-21% Mn, 1-3% Si). Carlot per gross ton, $85, Palmerton, Pa.; $85, Pittsburgh and Chicago; (16% to 19% Mn) $1 per ton lower.

Standard Ferromanganese: (Mn 78-82%, C 7% approx.) Carload, lump, bulk $225 per gross ton of alloy, c.l. packed $237; gross ton lots, packed, $252; less gross ton lots, packed $269; f.o.b. Sheridan, Pa., Alloy, W. Va., Niagara Falls, N. Y., Ashtabula, Philo or Marietta, O., Lynchburg, Va. Base price: $227, Johnstown, Pa.; $228, Etna, Pa.; $226, Anaconda, Mont.
Shipment from Pacific Coast warehouses by one seller, add $33 to above prices f.o.b. Los Angeles, Oakland, Portland, Oreg. Shipment from Chicago warehouse, ton lots $267; less gross ton lots, $284, f.o.b. Chicago. Add or subtract $2.80 for each 1% or fraction thereof, of contained manganese over 82% and under 78%, respectively.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.0c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max 0.50% C, and 4.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 0.5c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85%, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal, 2" x D (Mn 96% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.45c. Delivered. Spot, add 2c.

Electromanganese: Carload, 30c; ton lots, 32c; 250 to 1999 lb, 34c. Premium for hydrogen-removed metal, 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.4c per lb of alloy, carload packed, 12.15c, ton lots 13.05c, less ton 14.05c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max. Si 4% max. C 0.10% max) Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%.) Contract, $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 24.75c per lb of contained Cr; c.l., packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%) Contract, carload, lump, bulk, max. 0.03% C 37.60c per lb contained Cr, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot add 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%) Contract, c.l. S M x D, bulk, 26.25c per lb of contained Cr. C.l., packed 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max.) Contract, carload, packed, S M x D, 18.35c per lb of alloy; ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-47%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 23.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 25.90c per pound of contained chromium plus 12.60c per pound of contained silicon, F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 36-39%, Al 7-9%, C 0.05% max.) 25.75c per lb of contained silicon plus 16.4c per lb of contained silicon plus aluminum 3" x down, delivered.

Chromium Metal: (Min 97% Cr and 1% Fe) contract carload, 1" x D; packed, max 0.50% C grade, $1.12 per lb of contained chromium, ton lots $1.14, less ton $1.16. Delivered. Spot, add 5c; prices on 0.10 per cent carbon grade, up 4c.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot add 0.25c..

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 10.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot add 0.25c.

SILICON ALLOYS

25-30% **Ferrosilicon:** Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% **Ferrosilicon:** Contract, carload, lump, bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% **Ferrosilicon:** Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

90-95% **Ferrosilicon:** Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c. Delivered. Spot, add 0.25c.

Silicon Metal: (Min 97% Si and 1% max Fe) C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max. 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 20 to 1999 lb 11.65c, smaller lots 12.15c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max.). Contract, c.l. lump, bulk 7.0c per lb of alloy, c.l. packed 7.75c, ton lot 8.5c, less ton 9.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot add 0.25c.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.10 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max), $3.20. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max) $3.30.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

TUNGSTEN ALLOYS*

Ferrotungsten: (70-80%), 10,000 lb W or more, $4.85 per lb of contained W; 2000 lb W to 10,000 lb W, $4.95; less than 2000 lb W, $5.07, f.o.b. Niagara Falls, N. Y.

*Government ceiling prices, effective May 7, 1951, f.o.b. Niagara Falls, N. Y., basis

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump, carloads 9.50c per lb. f.o.b. Suspension Bridge, N. Y. freight allowed same as high-carbon ferrotitanium.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3¾ lb each and containing exactly 2 lb or Cr). Contract, carload, bulk, 14.50c per lb of briquet, carload packed 15.2c, ton 16.0c, less ton 16.9c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.45c per lb of briquet, c.l. packaged 13.25c, ton lot 14.05c, less ton 14.95c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.65c, per lb of briquet, c.l. packed 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size — weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.95c per lb of briquet, c.l. packed 7.75c, ton lot 8.85c, less ton 9.45c. Delivered. Spot, add 0.25c.
(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 7.1c, c.l. packed 7.9c, ton lot 8.7c, less ton 9.6c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max., C 0.4% max). Contract, ton lot, 2" x D, $4.90 per lb of contained Cb, less ton $4.95. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx. Ta 20% approx, and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $3.75 per lb of contained Cb plus Ta, deld.; less ton lots $3.80.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 45c per lb of alloy, ton lot 47c, less ton lot 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr, 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 18c per lb of alloy; ton lots 19c; less ton lots 20.50c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-S Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed, 15c per lb of alloy; ton lots 16.50c; less ton lots 17.75c, f.o.b., Niagara Falls; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al; bal. Fe) Lump, carload, bulk 14.50c, packed 15.50c; ton lots, packed, 15.75c; less ton lots, packed, 16.25c per lb of alloy, delivered to destination within United States.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb. contained Mo f.o.b. Langeloth, $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic-Oxide: Per lb. contained Mo, f.o.b. Langeloth, Pa., $1.14, in cans; in bags $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.

"Mother's asleep now, son," Dad told him. "She'll be asleep a long, long time. It's kind of like going away. We'll have to learn to get along without her, Johnnie."

To a statistic named Johnnie

Who's Johnnie? Just one of the 175,000 children under eighteen here in the United States who have lost a mother to cancer.

Statistics are a little too big for a boy this small to understand. Even the hopeful ones about cancer—and there are more every year.

More and more today—cancer can be cured

Patients are being cured who could not have been saved—even five years ago. In 1952, some 70,000 with cancer were saved.

And this number could have been doubled, if treatment in all the cases had been begun in time.

Your contributions to the American Cancer Society helped make such hopeful statistics possible. And they can make the story even brighter tomorrow.

Not for Johnnie, to be sure.

But for all the other children—*they might be yours*—who still have their mothers and fathers. If only *one tenth* of the millions of people like you who have such good intentions would actually take the time to send us their contributions! *And would do it now—instead of turning the page . . .*

AMERICAN CANCER SOCIETY

Gentlemen:

Please send me free literature about cancer.
Enclosed is my contribution of $ _____
to the cancer crusade.

Name _____

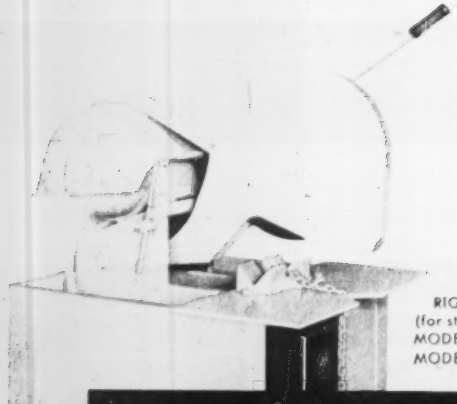
Address _____

City _____ State _____

Simply address the envelope:
"Cancer," c/o Postmaster, Name of Your Town

CANCER STRIKES ONE IN FIVE

Strike back—give to the American Cancer Society



RIGHT ANGLE
(for straight cuts)
MODEL 75-10 RA
MODEL 10-15 RA

WISE ABRASIVE CUT-OFF SAWS

Give you **FASTER CUTS** *with*
MAXIMUM WHEEL LIFE

GREATER POWER IS THE SECRET

Wise saws are power packed with 7½ or 10 h.p. *HEAVY DUTY* motors. This permits faster cuts with extra hard 18" or 20" wheels. These wheels last longer and, in turn, produce more cuts per wheel dollar!

Wise saws also cost less than similar capacity saws—*much less!* Construction throughout is heavy duty. Designed to meet the needs of all industries. New safety guard is unmatched. Number 2 Magnetic Starter is standard equipment.

RIGHT ANGLE OR SWING HEAD TYPES

Both saws have the same outstanding construction and power features. WILL CUT UP TO 6" PIPE AND 8" CHANNEL IN ONLY A MATTER OF SECONDS!

SWING HEAD
(head swings for 90° to 45° mitre cuts)
MODEL 75-10 SH
MODEL 10-15 SH

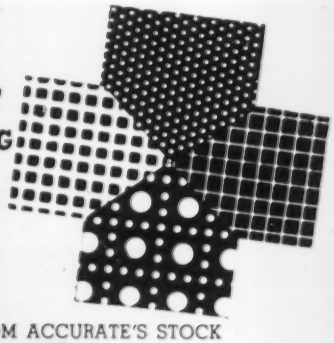
Write for free descriptive folder No. WS-1000-4. Provides valuable data on recommended wheel grades for different types of cutting.

HENRY H. WISE CO.
945 WILSHIRE BLVD., LOS ANGELES 17, CALIF.

World's largest distributor of Manhattan Abrasive Wheels.

Territories Open
DISTRIBUTORS AND DEALERS WANTED

YOU GET PERFORATING PLUS



STEEL AVAILABLE FROM ACCURATE'S STOCK

ACCURATE PERFORATING GIVES YOU
THESE PERFORATING **PLUS** EXTRAS

PLUS Experienced "Know How"
PLUS Engineering Consultation
PLUS Special Dies for Your Needs

Whether you need pinpoint perforation for a coffee filter or an ornamental grille for an ocean liner, Accurate Perforating offers all these extras PLUS—a price that's hard to beat. Write today for your free catalog on Accurate Perforated materials.

SERVING THESE INDUSTRIES:
AIRCRAFT • AUTOMOTIVE • COMMUNICATIONS • ELECTRICAL EQUIPMENT • FARM MACHINERY • HEATING • RADIO AND RADAR • RAILROADS • SHIP BUILDING • STEEL • WASHING MACHINES

IN THESE MATERIALS:
ALUMINUM • BRASS • BRONZE • COPPER • LEAD • MONEL METAL • STEEL • MASONITE • STAINLESS STEEL • PLYWOOD • PAPER

ACCURATE
PERFORATING COMPANY
1101 South Kedzie Avenue, Chicago 12, Illinois

Insist on CIRCO

METAL CLEANING EQUIPMENT
DEGREASING SOLVENTS

- VAPOR DEGREASERS
- METAL PARTS WASHERS
- STEAM CLEANERS

PER-SOLV (Perchlorethylene) CIRCO-SOLV (Trichlorethylene)

Manufactured by
TOPPER EQUIPMENT COMPANY
Clark Township (Rahway) New Jersey

TOLEDO STAMPINGS

Let us make your stamping problems our problems. Our Engineering Department has had many years of experience in development work and our production facilities include not only a modern press department, but facilities for copper hydrogen brazing and other types of welding and assembling work. We solicit your prints and inquiries.

Toledo Stamping and Manufacturing Co.
90 Fearing Blvd., Toledo, Ohio
Detroit Office: 12800 Puritan Ave., Detroit 27, Mich.
Chicago Office: 333 North Michigan Ave., Chicago, Ill.

Structural Shapes . . .

Structural Shape Prices, Page 200

Chicago—Structural fabricators report an upturn in industrial inquiries. For some time these had been lagging. There now is optimism that shop facilities will be well committed for the next several months. Structural mills will be obliged to accommodate customers on a quota basis in third quarter the same as previously. Some of the easing recently anticipated may not develop.

Boston—On limited volume of bridge tonnage estimated, prices for fabricated structural steel are more competitive and below those in the same period last year. Of other finished steel products entering into bridges, grid flooring is relatively easy, delivery under 60 days, but bearing and sheet piling are somewhat more extended. Schools lead in public building construction. Structural mill backlogs are more extended. Fabricating shops are hampered by shortages in heavier plate sizes.

New York—While still light in relation to public construction, commercial structural activity is improving. This latter includes a fair sprinkling of industrial work.

Philadelphia—Structural awards are light, but indications are volume will improve as an increasing amount of work is being figured. Some jobs that have been pending for some time appear on the point of being closed. Public demand still dominates the market, not only from the standpoint of size of projects, but number as well. The ratio over private work is not pronounced, however, and as the latter includes more small jobs, small fabricating shops are encouraged.

Pittsburgh—Some lag in delivery of structurals seems in the offing. Slightly longer delivery schedules are indicated for third quarter as result of the shutdown of No. 3 open hearth at the Homestead works of U. S. Steel Corp. To what extent structural deliveries will suffer has not been determined, but it is agreed the tonnage loss will place greater burden on other structural facilities in the district.

Seattle—Large and small fabricating shops were idled recently by a machinists' strike. The interruption was a blow to Alaskan military construction. Several important structural tonnages remain unplaced.

Semifinished Steel . . .

Semifinished Prices, Page 200

Youngstown—Strike on the railroad serving two U. S. Steel Corp. plants here ended last midweek after the mills had been closed down for about a week. Something like 60,000 tons of ingots are expected to be lost before the steelworks and mills are again in full operation. Resumption of production followed quickly upon the strike settlement though it took a couple days for blast furnaces, open hearths and rolling mills to regain full operating schedules. District ingot operations last week averaged 95 per cent of capacity. This compares with the 106 per cent rate that had been in effect for many weeks prior to the shutdown.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 199

Cleveland—Oven coke supplies are adequate to support current spotty foundry operations without difficulty. Sellers, however, are disposing of their tonnage to regular customers with the result there is no surplus on the market.

Chicago—Foundry coke supply is in pretty fair balance with demand. Consumers' stocks are reasonably good and sellers are under no great pressure to speed up deliveries.

Hamilton, Ont.—The Steel Co. of Canada Ltd. has given the first "warming" to a new battery of 47 coke ovens at its Hamilton Works. The ovens are scheduled to go into production about June 7. The battery will give the plant a total of 191 coke ovens, turning out about 3500 tons of coke daily.

Western Buyers "Shopping"

San Francisco—Steel buyers are getting into a "shopping" mood. For the first time in years they are beginning to put the price factor above delivery. In other words, they are turning down immediate delivery promises to shop around.

Shopping around sometimes pays dividends because of the differences in freight charges. Mills far removed from the local scene are finding themselves at a disadvantage. On competitive items they find themselves above western mill prices because of the freight differential.

This has not made big inroads in eastern mill sales in the territory so far, but the trend is establishing. Eastern mills, however, have a big edge on western producers because of their wider diversification and heavier volume of products.

The freight differential is expected to become a more important factor as time goes on and the trade would like to see steps taken toward equalization.

Pig Iron . . .

Pig Iron Prices, Page 180

Philadelphia—Following suspension for relining, a blast furnace at Steelton, Pa., is back in operation. Currently producing basic iron, it is expected to be placed on low phos around Apr. 24. A slight gain is noted in gray iron foundry operations, but there is little improvement in soil pipe production.

Nancy blast furnace at the Fairless works, Morrisville, Pa., is scheduled to resume production in the week of Apr. 20, following suspension for relining. Hazel furnace, the second Fairless works stack, is scheduled to go into blast later.

Boston—Pig iron shipments are in small lots at a rate enabling consumers to maintain inventories at a level adequate for the current melt. The district blast furnace is stocking

(Turn to page 202)

Lil' CHAMP SAYS...
"INSURE SAFE DEPOSITS— BANK ON CHAMPION WELDING ELECTRODES"
BOY IT'S JUST LIKE PUTTING MONEY IN THE BANK USING CHAMPION ELECTRODES! SOUND, SAFE DEPOSITS MORE WELD FOOTAGE !!!
BROTHER I AGREE THERE'S NOTHING LIKE EM FOR FAST WORK!
FOR TOP QUALITY WELDS CHAMPION ELECTRODES DELIVER THAT EXTRA FACTOR OF SAFETY! THERE IS A DEPENDABLE CHAMPION ELECTRODE FOR ANY WELDING APPLICATION
THE CHAMPION RIVET CO.
CLEVELAND, OHIO
East Chicago, Ind.

Semifinished and Finished Steel Products

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company; key on pages 200-201.

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ....$81.00
Munhall,Pa. U5 .....64.00
Seattle S24 .....75.00

INGOTS, Alloy (NT)
Detroit R7 .....$57.00
Fontana,Calif. K1 ....83.00
Houston S5 .....65.00
Midland, Pa. C18 ....57.00
Munhall, Pa. U5 .....57.00

BILLETS, BLOOMS & SLABS
Carbon, Rerolling (NT)
Bessemer,Pa. U5 ....$59.00
ClairtonPa. U5 .....59.00
Ensley,Ala. T2 .....59.00
Fairfield, Ala. T2 ....59.00
Fontana,Calif. K1 ....78.00
Gary,Ind. U5 .....59.00
Johnstown,Pa. B2 ....59.00
Lackawanna,N.Y. B2 ..59.00
Munhall,Pa. U5 .....59.00
So.Chicago,Ill. U5 ....59.00
So.Duquesne,Pa. U5 ...59.00

Carbon, Forging (NT)
Bessemer,Pa. U5 ....$70.50
Buffalo R2 .....70.50
Canton,O. R2 .....70.50
Clairton,Pa. U5 .....70.50
Cleveland R2 .....70.50
Conshohocken,Pa. A3 ..77.50
Detroit R7 .....73.50
Ensley,Ala. T2 .....70.50
Fairfield,Ala. T2 .....70.50
Fontana,Calif. K1 ....89.50
Gary,Ind. U5 .....70.50
Geneva,Utah C11 .....70.50
Houston S5 .....78.50
Johnstown,Pa. B2 ....70.50
Lackawanna,N.Y. B2 ..70.50
LosAngeles B3 .....89.50
Munhall,Pa. U5 .....70.50
Seattle B3 .....89.50
So.Chicago R2,U5,W14 .70.50
So.Duquesne,Pa. U5 ...70.50
So.SanFrancisco B3 ...89.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$76.00
Buffalo R2 .....76.00
Canton,O. R2 .....76.00
Canton,O. T7 .....78.60
Conshohocken,Pa. A3 ..83.00
Detroit R7 .....79.00
Fontana,Calif. K1 ....95.00
Gary,Ind. U5 .....76.00
Houston S5 .....84.60
Ind.Harbor,Ind. Y1 ....76.00
Johnstown,Pa. B2 ....76.00
Lackawanna,N.Y. B2..76.00
LosAngeles B3 .....96.00
Massillon,O. R2 .....76.00
Midland,Pa. C18 .....76.00
Munhall,Pa. U5 .....76.00
So.Chicago R2,U5,W14 .76.00
So.Duquesne,Pa. U5 ...76.00
Struthers,O. Y1 .....76.00
Warren,O. C17 .....76.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$87.50
Canton,O. R2 .....87.50
Cleveland R2 .....87.50
Fontana,Calif. K1 ....108.50
Gary,Ind. U5 .....87.50
Massillon,O. R3 .....87.50
So.Chicago,Ill. R2 ....87.50
So.Duquesne,Pa. U5 ...87.50

SHEET BARS (NT)
Fontana,Calif. K1 ....$93.18

SKELP
Aliquippa,Pa. J5 .....3.65
Munhall,Pa. U5 .....3.55
Warren,O. R2 .....3.55
Youngstown R2, U5 ....3.55

WIRE RODS
Alton,Ill. L1 .....4.70
AlabamaCity, Ala. R2..4.325
Buffalo W12 .....4.325
Cleveland A7 .....4.325
Donora,Pa. A7 .....4.325
Fairfield,Ala. T2 .....4.325
Fontana,Calif. K1 ....5.125
Houston S5 .....4.725
Johnstown,Pa. B2 ....4.325
Joliet,Ill. A7 .....4.325
KansasCity,Mo. S5 ....4.665
LosAngeles B3 .....5.125
Minnequa,Colo. C10 ...4.575
Monessen,Pa. P7 .....4.525
No.Tonawanda,N.Y.B11 4.325
Pittsburg,Calif. C11 ..4.975
Portsmouth,O. P12 ....4.525
Roebling, N. J. R5 ....4.425
So. Chicago,Ill. R2 ....4.325
SparrowsPoint,Md. B2..4.425
Sterling,Ill.(1) N15 ....4.325
Struthers,O. Y1 .....4.325
Torrance,Calif. C11 ....5.125
Worcester,Mass. A7 ....4.625

SHEET STEEL PILING
Ind.Harbor,Ind. I-2 ...4.675
Lackawanna,N.Y. B2 ..4.675
Munhall,Pa. U5 .....4.675
So.Chicago,Ill. U5 ....4.675

STRUCTURALS
Carbon Steel Stand. Shapes
AlabamaCity, Ala. R2 ..3.85
Aliquippa,Pa. J5 .....3.85
Bessemer,Ala. T2 .....3.85
Bethlehem,Pa. B2 ....3.90
Clairton,Pa. U5 .....3.85
Fairfield,Ala. T2 .....3.85
Fontana,Calif. K1 .....4.50
Gary,Ind. U5 .....3.85
Geneva,Utah C11 .....3.85
Houston S5 .....4.25
Ind Harbor,Ind. I-2 ....3.85
Johnstown,Pa. B2 .....3.90
KansasCity,Mo. S5 ....4.45
Lackawanna,N.Y. B2 ..3.90
LosAngeles B3 .....4.45
Minnequa,Colo. C10 ...4.30
Munhall,Pa. U5 .....3.85
Niles,Calif.(22) P1 .....4.56
Phoenixville,Pa. P4 ....4.95
Seattle B3 .....4.50
So.Chicago,Ill. U5, W14..3.85
So.SanFrancisco B3 ....4.40
Torrance,Calif. C11 ....4.45
Weirton,W.Va. W6 ..,.4.10

Wide Flange
Bethlehem,Pa. B2 .....3.90
Clairton,Pa. U5 .....3.85
Fontana,Calif. K1 .....5.05
Lackawanna,N.Y. B2 ..3.90
Munhall,Pa. U5 .....3.85
So. Chicago,Ill U5 ....3.85

Alloy Stand. Shapes
Clairton,Pa. U5 .....4.725
Fontana,Calif. K1 ....6.125
Gary,Ind. U5 .....4.725
Munhall,Pa. U5 .....4.725
So.Chicago,Ill. U5 ....4.725

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....5.80
Bessemer,Ala. T2 .....5.80
Bethlehem,Pa. B2 .....5.80
Clairton,Pa. U5 .....5.80
Fairfield,Ala. T2 .....5.80
Fontana,Calif. K1 ....6.45
Gary,Ind. U5 .....5.80
Geneva,Utah C11 .....5.80
Ind Harbor,Ind. I-2 ....5.80
Ind.Harbor,Ind. Y1 ....6.30
Johnstown,Pa. B2 .....5.80
Lackawanna,N.Y. B2 ..5.80
LosAngeles B3 .....6.35
Munhall,Pa. U5 .....5.80
Seattle B3 .....6.40
So.Chicago,Ill. U5 .....5.80
So.SanFrancisco B3 ....6.30
Struthers,O. Y1 .....6.30

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....5.80
Lackawanna,N.Y. B2 ..5.80
Munhall,Pa. U5 .....5.75
So.Chicago,Ill. U5 .....5.75

BEARING PILES
Munhall,Pa. U5 .....3.85
So.Chicago,Ill. U5 .....3.85

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.95
Bessemer,Ala. T2 .....5.95
Clairton,Pa. U5 .....5.95
Cleveland J5, R2 .....5.95
Conshohocken,Pa. A3 ...6.20
Ecorse,Mich. G5 .....6.90
Fairfield,Ala. T2 .....5.95
Fontana,Calif.(30) K1 ..6.65
Gary,Ind. U5 .....5.95
Geneva,Utah C11 .....5.95
Ind Harbor,Ind. I-2 ....5.95
Ind.Harbor,Ind. Y1 ....6.45
Johnstown,Pa. B2 .....5.95
Munhall,Pa. U5 .....5.95
Pittsburgh J5 .....5.95
Seattle B3 .....6.85
Sharon,Pa. S3 .....5.95
So.Chicago,Ill. U5 .....5.95
Sparrows Point,Md. B2..5.95
Warren,O. R2 .....5.95
Youngstown Y1 .....6.45
Youngstown U5 .....5.95

PLATES, Open-Hearth Alloy
Claymont,Del. C22 .....5.35
Coatesville,Pa. L7 .....5.75
Conshohocken,Pa. A3 ..5.55
Fontana,Calif. K1 .....6.30
Gary,Ind. U5 .....5.25
Johnstown,Pa. B2 .....5.25
Munhall,Pa. U5 .....5.25
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5 .....5.25
SparrowsPoint,Md. B2..5.25

FLOOR PLATES
Cleveland J5 .....4.95
Conshohocken,Pa. A3 ..4.95
Ind.Harbor,Ind. I-2 ....4.95
Munhall,Pa. U5 .....4.95
So.Chicago, Ill. U5 ....4.95

PLATES, Ingot Iron
Ashland,c.l. (15) A10 ..4.15
Cleveland,c.l. R2 .....4.50
Warren,O., c.l. R2 ....4.50

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..3.90
Aliquippa,Pa. J5 .....3.90
Ashland,Ky. (15) A10 ..3.90
Bessemer,Ala. T2 .....3.90
Clairton,Pa. U5 .....3.90
Claymont,Del. C22 .....4.35
Cleveland J5, R2 .....3.90
Coatesville,Pa. L7 .....4.35
Conshohocken,Pa. A3 ..4.35
Ecorse,Mich. G5 .....4.45
Fairfield,Ala. T2 .....3.90
Fontana,Calif.(30) K1..4.55
Gary,Ind. U5 .....3.90
GraniteCity,Ill. G4 ....4.60
Geneva,Utah C11 .....3.90
Harrisburg,Pa. C5 ....6.50
Houston S5 .....4.30
Ind.Harbor,Ind. I-2, Y1.3.90
Johnstown,Pa. B2 .....3.90
Lackawanna,N.Y. B2 ..3.90
Minnequa,Colo. C10 ....4.70
Munhall,Pa. U5 .....3.90
Pittsburgh J5 .....3.90
Seattle B3 .....4.80
Sharon,Pa. S3 .....4.15
So.Chicago,Ill. U5, W14..3.90
SparrowsPoint,Md. B2 ..3.90
Stubenville,O. W10 ....3.90
Warren,O. R2 .....3.90
Weirton,W.Va. W6 .....4.20
Youngstown R2, U5, Y1.3.90

PLATES, Carbon A.R.
Fontana,Calif. K1 .....5.70
Geneva,Utah C11 .....5.05

PLATES, Wrought Iron
(Add 4.7% to base and extras)
Economy,Pa. B14 .....8.60

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ..3.95
Aliquippa,Pa. J5 .....3.95
Alton,Ill. L1 .....4.50
Atlanta,Ga. A11 .....4.50
Bessemer,Ala. T2 .....3.95
Buffalo R2 .....3.95
Canton,O. R2 .....3.95
Clairton,Pa. U5 .....3.95
Cleveland R2 .....3.95
Detroit R7 .....4.10
Ecorse,Mich. G5 .....4.30
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 .....3.95
Fontana,Calif. K1 ....4.65
Gary,Ind. U5 .....3.95
Houston S5 .....4.35
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 .....3.95
KansasCity, Mo. S5 ....4.55
Lackawanna,N.Y. B2 ..3.95
LosAngeles B3 .....4.65
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....4.65
N.Tonawanda,N.Y. B11.3.95
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 .....3.95
Seattle B3, N14 .....4.70
So.Chicago R2,U5,W14 ..3.95
So.Duquesne,Pa. U5 ...3.95
So.SanFran.,Calif. B3..4.70
Sterling,Ill. N15 .....4.55
Struthers,O. Y1 .....3.95
Torrance Calif. C11 ....4.65
Weirton,W.Va. W6 .....4.10
Youngstown R2, U5 ....3.95

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....3.95
Atlanta A11 .....4.50
Niles,Calif. P1 .....4.65
SanFrancisco S7 .....5.00

BAR SIZE ANGLES; H.R.CARBON
Bethlehem,Pa. B2 .....4.15

BARS,Hot-Rolled Alloy
Bethlehem,Pa. B2 .....4.675
Buffalo R2 .....4.675
Canton,O. T7 .....4.72
Canton,O. R2 .....4.675
Clairton,Pa. U5 .....4.675
Detroit R7 .....4.825
Ecorse,Mich. G5 .....5.025
Fontana,Calif. K1 .....7.175
Gary,Ind. U5 .....4.675
Houston S5 .....5.075
Ind.Harbor,Ind. I-2, Y1.4.675
Johnstown,Pa. B2 .....4.675
KansasCity,Mo. S5 ....5.275
Lackawanna,N.Y. B2 ..4.675
LosAngeles B3 .....5.725
Massillon,O. R2 .....4.675
Midland,Pa. C18 .....4.675
So.Chicago R2,U5,W14.4.675
So.Duquesne,Pa. U5 ...4.675
Struthers,O. Y1 .....4.675
Warren,O. C17 .....4.675
Youngstown U5 .....4.675

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....4.925
Gary,Ind. U5 .....4.925
Youngstown U5 .....4.925

BARS & SMALL SHAPES, H. R. High-Strength Low-Alloy
Aliquippa,Pa. J5 .....5.925
Bessemer,Ala. T2 ....5.925
Bethlehem,Pa. B2 .....5.925
Clairton,Pa. U5 .....5.925
Cleveland R2 .....5.925
Ecorse,Mich G5 .....6.675
Fairfield,Ala. T2 .....5.925
Fontana,Calif. K1 ....6.975
Gary,Ind. U5 .....5.925
Ind.Harbor,Ind. I-2 ....5.925
IndianaHarbor,Ind. Y1.6.425
Johnstown,Pa. B2 ....5.925
Lackawanna,N.Y. B2 ..5.925
LosAngeles B3 .....6.625
Pittsburgh J5 .....5.925
Seattle B3 .....6.675
So.Duquesne,Pa. U5 ...5.925
So.San.Francisco B3 ...6.675
Struthers,O. Y1 .....6.425
Youngstown U5 .....5.925

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....4.925
BeaverFalls,Pa. R2 ....4.925
BeaverFalls,Pa. M12..4.925
Buffalo B5 .....4.975
Camden,N.J. P13 .....5.375
Carnegie,Pa. C12 .....4.925
Chicago B5 .....4.925
Chicago W18 .....4.925
Cleveland A7, C20 ....4.925
Detroit P17, R7 .....5.075
Detroit B5 .....5.125
Donora,Pa. A7 .....4.925
Elyria,O. W8 .....4.925
FranklinPark,Ill. N3 ..4.925
Gary,Ind. R2 .....4.925
GreenBay,Wis. F7 .....4.925
Hammond,Ind. I.2,M13.4.925
Hartford,Conn. R2 ....5.475
LosAngeles R2 .....6.375
Mansfield,Mass B5 ....5.475
Massillon,O. R2, R8 ..4.925
Monaca,Pa. S17 .....4.925
Newark,N.J. W18 .....5.375
Plymouth,Mich. P5 ....5.175
Pittsburgh J5 .....4.925
Putnam Conn. W18 .....5.475
Readville,Mass. C14 ....5.475
St.Louis,Mo. M5 .....5.30
So.Chicago,Ill. W14 ...4.925
SpringCity,Pa. K3 ....5.375
Struthers,O. Y1 .....4.925
Waukegan,Ill A7 .....4.925
Youngstown Y1 .....4.925
Youngstown F3 .....4.925

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 .....6.00
BeaverFalls,Pa. M12 ...6.00
Bethlehem, Pa. B2 .....6.00
Buffalo B5 .....6.00
Camden,N.J. P13 .....6.40
Canton,O. R2 .....6.00
Canton,O. T7 .....5.99
Carnegie,Pa. C12 .....6.00
Chicago B5 .....6.00
Chicago W18 .....6.00
Cleveland A7 .....6.05
Cleveland C20 .....6.00
Detroit P17, R7 .....6.15
Detroit B5 .....6.20
Donora,Pa. A7 .....6.05
Elyria,O. W8 .....6.00
Gary,Ind. R2 .....6.00
Hammond,Ind. L2,M13 6.00
Hartford,Conn. R2 .....6.45
Lackawanna,N.Y. B2 ..6.00
Mansfield,Mass. B5 ....6.45
Massillon,O. R2,R8 ....6.00
Midland,Pa. C18 .....6.00
Monaca,Pa. S17 .....6.00
Newark,N.J. W18 .....6.35
Plymouth,Mich. P5 .....6.20
So.Chicago,Ill. R2, W14.6.00
SpringCity,Pa. K3 .....6.20
Struthers,O. Y1 .....6.00
Warren,O. C17 .....6.00
Waukegan,Ill. A7 .....6.05
Worcester,Mass. A7 ....6.35
Youngstown Y1 .....6.00
Youngstown F3 .....6.00

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala R2 ...3.95
Atlanta A11 .....4.50
Buffalo R2 .....3.95
Cleveland R2 .....3.95
Emeryville,Calif. J7 ....4.70
Fairfield,Ala. T2 .....3.95
Fontana,Calif. K1 ....4.65
Gary,Ind U5 .....3.95
Houston S5 .....4.35
Ind.Harbor,Ind. I-2, Y1.3.95
Johnstown,Pa. B2 .....3.95
KansasCity,Mo. S5 ....4.55
Lackawanna,N.Y. B2....3.95
LosAngeles B3 .....4.65
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....4.65
Pittsburg,Calif. C11 ....4.65
Pittsburgh J5 .....3.95
SandSprings,Okla. S5 ..4.85
Seattle B3, N14 .....4.70
So.Chicago,Ill. R2 .....3.95
So.Duquesne,Pa. U5 ....3.95
So.SanFrancisco B3 ....4.70
SparrowsPoint,Md. B2...3.95
Sterling,Ill. (1) N15 ....4.70
Struthers,O. Y1 .....3.95
Torrance,Calif. C11 ....4.65
Youngstown R2, U5 ....3.95

BARS, Reinforcing (Fabricated; to consumers)
Huntington,W.Va. W7 ...5.50
Johnstown, ¾-1" B2 ....5.25
KansasCity S5 .....6.05
LosAngeles B3 .....5.45
Marion,O. P11 .....5.25

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A8 Anchor Drawn Steel Co.
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.
B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Div., H. K. Porter Co.
B14 A. M. Byers Co.
C1 Calstrip Steel Corp.
C2 Calumet Steel Div. Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept., Wickwire Spencer Steel Division
D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.
F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div. " Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
G2 Globe Iron Co.
G3 Globe Steel Tubes Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.
H1 Hanna Furnace Corp.
I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div. Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.
K1 Kaiser Steel Corp.
K2 Keokuk Electro Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co
L7 Lukens Steel Co.

Seattle B3 N14 .....5.80
Sand Springs S5 .....6.45
So.SanFrancisco B3 ....5.45
SparrowsPt. ¼-1" B2 ..5.25
Williamsport,Pa. S19 ...5.35

RAIL STEEL BARS

ChicagoHts.(3,4) C2 ...4.75
ChicagoHts.(3,4) I-2 ...4.75
Franklin,Pa.(3,4) F5 ...4.75
FortWorth,Tex.(26) T4..4.85
Huntngt,W.Va.(3) W7 ..5.75
Marion,O.(3) P11 .....4.75
Moline,Ill.(3) R2 .....4.05
Tonawanda(3,4) B12 ....5.00
Williamsport(3) S19 ...5.25
Williamsport,Pa. S19 ...5.35

BARS, Wrought Iron
(Add 4.7% to base and extras)

Economy,Pa.(S.R.) B14.9.60
Economy,Pa.(D.R.)B14 11.90
Economy(Staybolt) B14 12.20
McK.Rks.(Staybolt) L5.14.50
McK.Rks.(S.R.) L5 ....9.60
McK.Rks.(D.R.) L5 ...13.00

SHEETS, Hot-Rolled Steel
(18 gage and heavier)

AlabamaCity,Ala. R2 ..3.775
Ashland,Ky.(8)A10 ...3.775
Butler,Pa. A10 .....3.775
Cleveland J5, R2 .....3.775
Conshohocken,Pa. A3 ..4.175
Detroit M1 .....4.40
Ecorse,Mich. G5 .....3.975
Fairfield,Ala. T2 .....3.775
Fontana,Calif. K1 ....4.825
Gary,Ind. U5 .....3.775
Geneva,Utah C11 .....3.875
GraniteCity,Ill. G4 ....4.30
Ind.Harbor,Ind. I-2, Y1 3.775
Irvin,Pa. U5 .....3.775
Lackawanna,N.Y. B2 ..3.775
Munhall, Pa. U5 .....3.775
Niles,O. N12 .....5.425
Pittsburg,Calif. C11 ..4.475
Pittsburgh J5 .....3.775
Sharon,Pa. S3 .....4.175
So.Chicago,Ill. W14 ...3.775
SparrowsPoint,Md. B2.3.775
Steubenville,O. W10 ..3.775
Torrance,Calif. C11 ...4.475
Warren,O. R2 .....3.775
Weirton,W.Va. W6 ....3.775
WestLeechburg,Pa. A4.3.925
Youngstown U5, Y1 ..3.775

SHEETS, H.R. (19 gage)

AlabamaCity,Ala. R2 ..4.925
Dover,O. R1 .....5.825
Mansfield,O. E6 .....5.65
Niles,O. N12 .....5.675
Torrance,Calif. C11 ...5.575

SHEETS, Cold-Rolled
High-Strength Low-Alloy

Cleveland J5, R2 .....6.925
Ecorse,Mich. G5 .....7.475
Fontana,Calif. K1 .....7.975
Gary,Ind. U5 .....6.925
IndianaHarbor,Ind. Y1 .7.425
IndianaHarbor,Ind. I-2.6.925
Irvin,Pa. U5 .....6.925
Lackawanna(37) B2 ...6.925
Pittsburgh J5 .....6.925
SparrowsPoint(38) B2..6.925
Warren,O. R2 .....6.925
Weirton,W.Va. W6 ....7.275
Youngstown Y1 .....7.425

SHEETS, H.R. (14 ga. heavier)
High-Strength Low-Alloy

Cleveland J5, R2 .....5.675
Conshohocken,Pa. A3 ..5.925
Ecorse,Mich. G5 .....6.225
Fairfield,Ala. T2 .....5.675
Fontana,Calif. K1 ....6.775

Gary,Ind. U5 .....5.675
Ind.Harbor,Ind. I-2 ...5.675
Ind.Harbor,Ind. Y1 ...6.175
Irvin,Pa. U5 .....5.675
Lackawanna(35) B2 ...5.675
Munhall U5 .....5.675
Pittsburgh J5 .....5.675
Sharon,Pa. S3 .....5.675
So.Chicago,Ill. U5 ....5.675
SparrowsPoint(36) B2..5.675
Warren,O. R2 .....5.675
Weirton,W.Va. W6 ....6.025
Youngstown U5 .....5.675
Youngstown Y1 .....6.175

SHEETS, Cold-Rolled Steel
(Commercial Quality)

Butler,Pa. A10 .....4.575
Cleveland J5, R2 .....4.575
Ecorse,Mich. G5 .....4.775
Fairfield,Ala. T2 .....4.575
Follansbee,W.Va. F4 ...5.075
Fontana,Calif. K1 ....5.675
Gary,Ind. U5 .....4.575
GraniteCity,Ill. G4 ....5.275
Ind.Harbor,Ind. I-2,Y1.4.575
Irvin,Pa. U5 .....4.575
Lackawanna,N.Y. B2 ..4.575
Middletown,O. A10 ....4.575
Pittsburg,Calif. C11 ...5.525
Pittsburgh J5 .....4.575
SparrowsPoint,Md. B2..4.575
Steubenville,O. W10 ...4.575
Warren,O. R2 .....4.575
Weirton,W.Va. W6 ....4.575
West Leechburg,Pa. A4..5.45
Youngstown Y1 .....4.575

SHEETS, Galv'd No. 10 Steel

AlabamaCity,Ala. R2 ..5.075
Ashland,Ky.(8) A10 ...5.075
Canton,O. R2 .....5.075
Delphos,O. N16 .....5.675
Dover,O. R1 .....5.775
Fairfield,Ala. T2 .....5.075
Gary,Ind. U5 .....5.075
GraniteCity,Ill. G4 ....5.275
Ind.Harbor,Ind. I-2 ...5.075
Irvin,Pa. U5 .....5.075
Kokomo,Ind.(13) C16 ..5.475
MartinsFerry,O. W10 ..5.075
Niles,O. N12 .....6.275
Pittsburg,Calif. C11 ...5.525
SparrowsPoint,Md. B2 ..5.075
Steubenville,O. W10 ....5.075
Torrance,Calif. C11 ...5.525
Weirton,W.Va. W6 ....5.075

SHEETS, Galvanized No. 10,
High-Strength Low-Alloy

Irvin,Pa. U5 .....7.625
SparrowsPoint(39) B2..7.775

SHEETS, Galvannealed Steel

Canton,O. R2 .....5.625
Irvin,Pa. U5 .....5.625
Kokomo,Ind.(13) C16 ..6.025
Niles,O. N12 .....6.825

SHEETS ZINCGRIP STEEL No. 10

Butler,Pa. A10 .....5.325
Middletown,O. A10 ....5.325

SHEETS, Electro Galvanized

Cleveland R2 (28) 5.925
Niles,O. R2 (28) 5.925
Weirton,W.Va. W6 ....5.775

SHEETS, Well Casing

Fontana,Calif. K1 .....5.34

PLATE, Stock, 29 ga.

Yorkville,O. W10 .....7.00
Follansbee,W.Va. F4 ...7.10
Follansbee (23) F4 ....6.425

SHEETS, Enameling Iron

Ashland,Ky.(8) A10 ...4.925
Cleveland R2 .....4.925
Gary,Ind. U5 .....4.925

GraniteCity,Ill. G4 ....5.625
Ind.Harbor,Ind. I-2 ...4.925
Irvin,Pa. U5 .....4.925
Middletown,O. A10 ....4.925
Youngstown Y1 .....4.925

BLACK PLATE
(Base Box)

Aliquippa,Pa. J5 .....$6.50
Fairfield,Ala. T2 .....6.60
Gary,Ind. U5 .....6.50
GraniteCity,Ill. G4 ....6.70
Ind.Harbor,Ind. I-2, Y1 6.50
Irvin,Pa. U5 .....6.50
Niles,O. R2 .....6.50
Pittsburg,Calif. C11 ...7.25
SparrowsPoint,Md. B2 ..6.60
Warren,O. R2 .....6.50
Weirton,W.Va. W6 ....6.50
Yorkville,O. W10 .....6.50

HOLLOWARE ENAMELING
Black Plate (29 gage)

Follansbee,W.Va. F4 ...6.10
Gary,Ind. U5 .....6.10
GraniteCity,Ill. G4 ....6.30
Ind.Harbor,Ind. Y1 ....6.10
Irvin,Pa. U5 .....6.10
Yorkville,O. W10 .....6.35

SHEETS, Culvert No. 16	Cu Alloy	Cu Fe
Ashland,Ky. A10	5.875	....
Canton,O. R2 ..	5.925	6.375
Fairfield,Ala. T2	5.875	6.125
Gary,Ind. U5 ...	5.875	6.125
Ind.Harbor I-2 .	5.875	6.125
Irvin,Pa. U5 ...	5.875	6.125
Kokomo,Ind. C16	6.525	....
MartinsFy.,O.W10	5.875	....
Pittsburg Cal.C11	6.625	....
SparrowsPt. B2 .	5.875	....
Torrance,Cal.C11	6.625	....

SHEETS, Culvert, No. 16
Pure Iron

Ashland,Ky. A10 .....6.125
Fairfield,Ala. T2 .....6.125
MartinsFerry,O. W10 ..6.125

SHEETS, Hot-Rolled Ingot Iron
18 Gage and Heavier

Ashland,Ky.(8) A10 ..4.025
Cleveland R2 .....4.375
Ind Harbor,Ind. I-2 ...4.025
Warren,O. R2 .....4.375

SHEETS, Cold-Rolled Ingot Iron

Butler,Pa. A10 .....5.075
Cleveland R2 .....5.175
Middletown,O. A10 ....5.075
Warren,O. P2 .....5.175

SHEETS, Galvanized Ingot Iron
No. 10 flat

Ashland,Ky.(8) A10 ...5.325
Canton,O. R2 .....5.825

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10 .....5.575
Middletown,O. A10 ....5.575

SHEETS, ALUMINIZED

Butler,Pa. A10 .....8.425

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....5.875

MANUFACTURING TERNES
(Special Coated)

Fairfield,Ala. T2 .....$7.85
Gary,Ind. U5 .....7.75
Irvin,Pa. U5 .....7.75
Yorkville,O. W10 .....7.75

SHEETS, LT. Coated Ternes, 6 lb

Yorkville,O. W10 .....$8.65

SHEETS, Mfg. Ternes, 8 lb
(Commercial Quality)

Gary,Ind. U5 .....$9.75
Yorkville,O. W10 .....9.75

SHEETS, Long Terne Steel
(Commercial Quality)

BeechBottom,W.Va.W10 5.475
Gary,Ind. U5 .....5.475
Mansfield,O. E6 .....6.05
Middletown,O. A10 ....5.475
Niles,O. N12 .....6.275
Weirton,W.Va. W6 ....5.475

ROOFING SHORT TERNES
(8 lb Coated)

Gary,Ind. U5 .....9.75

TIN PLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1.	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11 ..	9.45	9.70
Sp.Pt.,Md. B2 ..	8.80	9.05
Warren,O. R2	8.70	....
Weirton,W.Va.W6	8.70	8.95
Yorkville,O. W10.	8.70	8.95

STRIP, Hot-Rolled
High-Strength Low-Alloy

Bessemer,Ala. T2 .....5.65
Conshohocken,Pa. A3...5.90
Ecorse,Mich. G5 .....6.30
Fairfield,Ala. T2 .....5.65
Fontana,Calif. K1 .....6.75
Gary,Ind. U5 .....5.65
Ind.Harb.,Ind. I-2 ....5.65
Ind.Harbor,Ind. Y1 ....6.15
Lackawanna,N.Y. B2 ...5.70
LosAngeles(25) B3 ....6.40
Seattle(25) B3 .....6.65
Sharon,Pa. S3 .....5.65
So.SanFrancisco(25) B3 6.40
SparrowsPoint,Md. B2 .5.70
Warren,O. R2 .....5.65
Weirton,W.Va. W6 ....6.10
Youngstown Y1 .....6.15
Youngstown U5 .....5.65

STRIP, Cold-Rolled
High-Strength Low-Alloy

Cleveland J5 .....7.45
Cleveland A7 .....7.30
Dover O. G6 .....8.00
Ecorse,Mich. G5 .....8.15
Lackawanna,N.Y. B2 ..7.90
Sharon,Pa. S3 .....7.50
SparrowsPoint,Md. B2 ..7.90
Warren,O. R2 .....7.30
Weirton,W.Va. W6 ....7.95
Youngstown Y1 .....7.80

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 ..3.725
Alton Ill. LI 4.20
Ashland,Ky(8) A10 ...3.725
Atlanta A11 .....4.275
Bessemer,Ala. T2 .....3.725
Bridgeport,Con.(10)S15 4.225
Buffalo(27) R2 .....3.725
Butler,Pa A10 .....3.725
Carnegie,Pa. S18 .....4.225
Conshohocken,Pa. A3 ..4.125
Detroit M1 .....4.40
Ecorse,Mich. G5 .....4.025
Fairfield,Ala. T2 .....3.725
Fontana,Calif. K1 .....5.175
Gary,Ind. U5 .....3.725
Houston,Tex. S5 .....4.125
Ind.Harbour,Ind. I-2,Y1.3.725
Johnstown,Pa.(25) B2..3.725
KansasCity,Mo.(9) S5..4.325
Lackawa,N.Y.(32) B2 .3.725

(Turn to page 204)

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	....	....
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

SHEETS, SILICON, H.R. or C.R (22 Ga.) COILS (Cut lengths ½c lower)	Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom W10 (cut lengths)	....	....	7.85	9.10	9.90
BrackenridgePa. A4	....	....	8.35	9.60	10.40
GraniteCity,Ill. G4 (cut lengths)	....	....	8.55	9.80	....
IndianaHarbor, Ind. I-2	7.55	7.85	(34)	(41)	....
Mansfield O. E6 (cut lengths)	7.20	7.35	7.85	9.10	9.90
Niles,O. N12 (cut lengths)	7.05	7.35	7.85	....	....
Vandergrift,Pa. U5	....	7.85	8.35	9.60	10.40
Warren O. R2	7.55	7.85	8.35	9.60	10.40
Zanesville,O. A10	....	7.85	8.35	9.60	10.40

SHEETS, SILICON (22 Ga. Base) COILS (Cut Lengths ½c lower) Transformer Grade	72	65	58	52
BeechBottom W10 (cut lengths)	10.45	11.00	11.70	12.50
Brackenridge,Pa. A4	10.95	....	....	....
Vandergrift,Pa. U5	10.95	11.50	12.20	13.00
Warren O. R2	10.95	....	....	....
Zanesville,O. A10	10.95	11.50	12.20	13.00

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22Ga.)	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	15.35	15.85
Vandergrift,Pa. U5	13.50	14.35	15.35	15.85

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Bera,O. C7	....	6.80	7.40	9.35	11.65
Bridgeport,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
Bristol,Conn. W1	....	....	8.55	10.50	....
Carnegie,Pa. S18	....	7.65	8.25	10.30	12.50
Cleveland A7	5.10	7.30	8.25	10.20	12.50
Dearborn,Mich. D3	6.05	7.90	8.50	....	....
Detroit D2	6.45	7.50	8.10	....	....
Dover,O. G6	5.70	7.65	8.25	10.20	12.50
FranklinPark,Ill. T6	5.45	7.45	8.40	10.35	12.65
Harrison,N.J. C18	....	....	8.55	10.50	12.80
Mattapan,Mass. T6	5.95	7.60	8.55	10.50	12.80
NewBritn.,Conn.(10) S15	5.80	7.65	8.25	10.20	12.50
NewCastle,Pa. B4	5.80	7.65	8.25	10.20	....
NewCastle,Pa. E5	5.80	7.65	8.25	10.20	12.50
NewHaven,Conn. D2	6.70	7.60	8.20	....	....
NewYork W3	....	7.95	8.55	10.50	12.80
Hawtucket,R.I. N8:					
Cleve.orPitts Base	....	7.65	8.25	10.20	12.50
Worcester,Mass.,Base	6.30	7.95	8.55	10.50	12.80
Sharon,Pa. S3	5.80	7.65	8.25	10.20	12.50
Trenton,N.J. R5	....	7.95	8.55	10.50	12.80
Wallingford,Conn. W2	6.20	7.60	8.20	10.15	12.65
Warren O. T5	6.20	7.65	8.25	10.20	12.50
Weirton,W.Va. W6	5.80	7.65	8.25	10.20	12.50
Worcester,Mass. A7	5.40	7.60	8.55	10.50	12.80
Worcester,Mass. T6	5.95	7.60	8.55	10.50	12.80
Youngstown C8	....	7.65	8.25	10.20	12.50
Spring Steel (Tempered)					
Trenton,N.J. R5 (29)	....	....	10.30	12.50	15.35
Harrison,N.J. C18	....	....	10.30	12.50	15.35
NewYork W3	....	....	10.30*	12.50*	15.35*
Youngstown C8	....	....	10.30	12.50	15.35

* Plus 1.575 per 100 lb.

Key to Producers

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.

N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.-HighCarb.Wire
N8 Newman-Crosby Steel
N12 Niles Rolling Mill Div.
N14 Nrthwst. Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P2 Pacific Tube Co.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P9 Pittsburgh Tube Co.
P11 Pollak Steel Co.
P12 Portsmouth Division, Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R4 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 Reliance Div., Eaton Mfg.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S9 Sloss-Sheffield S.& I. Div.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S24 Seidelhuber Steel

T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.

U4 Universal Cyclops Steel
U5 United States Steel Corp.

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.

Y1 Youngstown Sheet&Tube

Pig Iron . . .

(Continued from page 199)

some iron this month, but for several weeks balance in specifications will be lacking.

New York—With district foundry operations still lagging, pressure for pig iron remains easy. Gray iron shops average a little more than 70 per cent of normal capacity, and in most cases inventories run between 30 and 60 days' supply.

Buffalo—Merchant pig iron market continues to hold with supplies flowing steadily from the furnaces. Some of the general foundries are having difficulty maintaining production schedules. Shipments of iron by vessel to Michigan motor casters are heavy. Building equipment and home appliance casting makers are taking substantial iron tonnages.

Cleveland—While demand pressure for merchant iron is noticeably down from a year ago, sellers are disposing of their tonnage without much difficulty. Foundry operations continue spotty but they are better as compared with some months back. This is especially true of shops on automotive and appliance castings. No shortage of silvery iron is yet evidenced in the market here as result of the protracted shutdown because of labor trouble of two southern Ohio furnaces which are the supply source for much of the silveries consumed in this area.

Youngstown—Possibility that Pittsburgh Coke & Chemical Co.'s Anna blast furnace at Struthers, O., may be dismantled and the site used for another purpose is seen here. The furnace was blown out two weeks ago. General Motors Corp. has been taking the stack's entire output. Recently, about 70,000 tons of iron ore in the furnace's inventories were sold to Youngstown Sheet & Tube Co. R. M. Marshall, president of Pittsburgh Coke & Chemical said the contract with General Motors runs to Aug. 31, 1954. He said Pittsburgh Coke's two Neville Island blast furnaces can handle all its customers' needs. The Anna furnace is second smallest in this area, rated at 184,000 tons a year.

Cincinnati—Pig iron is plentiful in the Cincinnati area with the exception of silvery iron, which is short due to a two months' strike at Jackson, O. None of the foundries are too rushed. Some jobbing foundries are looking for business.

Chicago—Demand for pig iron remains strong in this area, partly reflecting active operations of foundries serving the automobile industry, and partly being due to the fact iron production is restricted by four of the districts 43 blast furnaces being down for repairs. Some foundries may be forced to acquire tonnage out of the district to maintain operations.

Interlake Iron Corp. blew out its South Chicago A stack Apr. 2 for complete rebuilding and enlargement from 525 to 850 tons per day. United States Steel Corp. idled two stacks, No. 2 at Gary on Apr. 3 for general repairs, and No. 2 at South works on Apr. 4 for relining.

Los Angeles—Melters' activity is increasing with backlogs of orders 30 to 60 days compared with 60 to 90 days last year.

Iron Ore . . .

Iron Ore Prices, Page 12.

Cleveland—While ice conditions on the upper lakes are causing some shipping delays, the downward movement of iron ore is stepping up. Shipments in the week ended Apr. 13 were 1,484,819 gross tons, according to the Lake Superior Iron Ore Association. This was 650,280 tons more than were moved in the like week a year ago and brings the 1953 season movement to date to 2,624,388 gross tons, 1,609,024 tons more than were shipped in the corresponding period of 1952.

Rails, Cars . . .

Track Material Prices, Page 204

New York—Domestic freight car orders in March involved 3379 units, according to the American Railway Car Institute and the Association of American Railroads. Backlog of cars on order as of Apr. 1 was 68,553. March deliveries totaled 6679, against 7780 in February, and 8159 in March 1952.

New York—Placing of 164 diesel electric locomotive units, costing $27,500,000, by the New York Cen-

DETROIT STAMPING COMPANY

359 MIDLAND AVE. • DETROIT 3, MICH.

Especially geared for light to medium heavy stampings and high volume runs of small, intricate "Multi-Stampings." We invite your inquiry or write for Stamping Brochure.

OHIO LOCOMOTIVE CRANES

25 TO 50 TON CAPACITY

DIESEL • GASOLINE • ELECTRIC • STEAM

THE OHIO LOCOMOTIVE CRANE CO.
BUCYRUS, OHIO

The Cleveland Steel Tool Co.

• PUNCHES • DIES • CHISELS • RIVET SETS •

IF IT'S *RIVETED* YOU *KNOW* IT'S SAFE

WE FEATURE SPECIAL PUNCHES & DIES

660 E. 82nd ST., CLEVELAND, O.

PERFORATED METALS
FOR ALL INDUSTRIAL USES

PERFORATIONS IN LIGHT SHEETS
TO HEAVY PLATES
ARCHITECTURAL GRILLES

SEND FOR CATALOG NO. 35

DIAMOND MFG. CO.
BOX 32 WYOMING, PA.

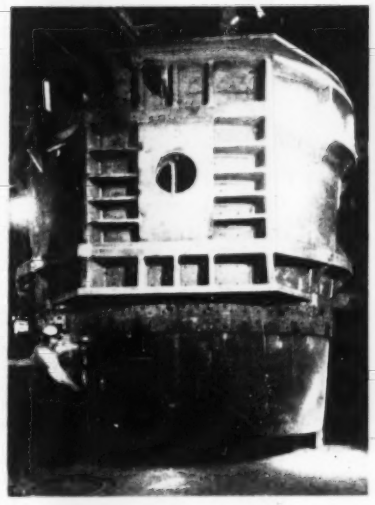
INTRODUCTION TO THE STUDY OF
HEAT TREATMENT OF METALLURGICAL PRODUCTS

By Albert Portevin

Fundamental knowledge and essential principles of heat treatment of steel are presented in simple and understandable manner. Research engineers, metallurgical students and steel plant metallurgists engaged in metallurgical investigations and the heat treatment of ferrous and non-ferrous metals will find this book of inestimable value.

246 pages — 4 tables
69 illustrations — Price $5.00 Postpaid

THE PENTON PUBLISHING CO.
Book Department, 1213 W. 3rd St., Cleveland 13, O.



A Ladle for Bethlehem

First of 18 open-hearth ladles is being constructed at the Bethlehem, Pa., plant of Bethlehem Steel Co. The 265-ton-capacity ladles will be among the largest in the steel industry. They are more than 16 feet high and weigh 44 tons apiece. They are part of the company's expansion program underway at the Sparrows Point, Md., plant

tral is outstanding in the railroad equipment market. Car awards continue light. With the delivery of the new equipment, New York Central will have 2113 diesel units, said to be more than any other railroad, with a total horsepower of 2,758,900. This will amount to approximately 60 per cent of the horsepower necessary for complete dieselization of the system.

Expansion Goes On at Atlas

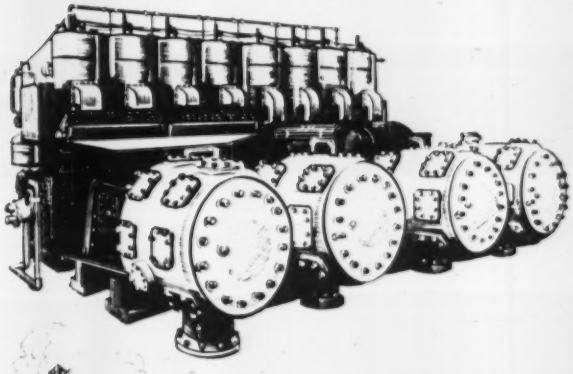
Atlas Steels Ltd., Welland, Ont., is in the final stages of its pace-setting expansion program.

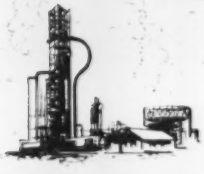
Included in the new Atlas equipment, which will be among the first of its kind for Canadian industry, are: Hot and cold stainless sheet mills, started in 1950; a new planetary-type hot strip mill, a cold-rolling stainless strip mill, scheduled for production early next year and a stainless welded tube mill.

Also among Canadian firsts is Atlas' equipment for continuous casting of steel. This installation is scheduled for operation late in 1953. It will improve the pouring of molten steel; will bypass ingot molds and blooming mill operations for certain production. An electric furnace is being installed which will melt high alloy and high temperature steels, including stainless, in quantities of 100, 350 and 750 pounds per heat. The first equipment for the automatic powder hot scarfing of stainless steel billets and slabs is also being installed.

Atlas Steel's 25th annual report states the company has returned 67 per cent of all profits back into the business over the 25-year period.

For DEPENDABILITY IN REFINERY EQUIPMENT





The Correct Fastener for the Job

These Erie bolts have at least one thing in common — they are designed to hold against maximum strains imposed by pressure, temperature, or corrosion. They differ in material, shape and threading as the job directs. For 38 years, we have geared our plant to manufacture these unusual high quality bolts to exacting specifications.

This broad experience backed by a high desire to be of service to you is your assurance that Erie is ready to meet your special bolting requirements.

Barium

ERIE BOLT and NUT CO.
ERIE • PENNSYLVANIA

Representatives in Principal Cities.

STRIP, Hot-Rolled Carbon
(Continued from page 201)

LosAngeles(2), B3	4.175
Milton,Pa. B6	4.35
Minnequa,Colo. C10	4.175
NewBritain(10), S5	4.225
N.Tonawanda,N.Y. B11	3.725
Pittsburg,Calif. C11	4.175
Riverdale,Ill. A1	3.725
SanFrancisco,S7	4.00
Seattle(2), B3	4.725
Seattle, N1F	4.75
Sharon,Pa. S3	4.225
So.Chicago,Ill. W14	3.725
So.SanFrancisco(2), B2	4.475
SparrowsPoint,Md. B2	3.725
Sterling,Ill. N15	4.725
Torrance,Calif. C11	4.475
Warren,O. R2	3.725
Weirton,W.Va. W6	3.825
WestLeechburg,Pa. A1	3.975
Youngstown,O. Y1	3.725

STRIP, Hot-Rolled Alloy

Bridgeprt,Conn.(10), S15	6.05
Carnegie,Pa. S18	6.45
Fontana,Calif. K1	*7.50*
Gary, Ind. U5	6.10
Houston,Tex. S9	6.50
KansasCity, Mo. S4	6.70
Midland,Pa. C18	6.85
NewBritn.,Conn.(10)S15	6.05
Sharon,Pa. S3	6.45
Youngstown,O. Y1	6.10

STRIP, Cold-Rolled Carbon

Anderson,Ind.(10), G6	5.50
Bridgeprt,Conn.(10) S15	5.80
Butler,Pa. A10	5.10
Cleveland,A7, J5	5.10
Dearborn,Mich. D3	6.00
Detroit D2	5.60
Detroit M1	5.40
Dover,O.(10), G6	5.50
Monroe,Mich. G3	5.30
Follansbee,W.Va. F1	5.10
Fontana,Calif. K1	*7.00*
FranklinPark,Ill.(10)T6	5.55
Ind Harbor,Ind. I-2	5.35
Lackawanna,N.Y. B2	5.10
LosAngeles C1	7.15
Mattapan,Mass. T6	5.95
Middletown,O. A10	5.10
NewBritain(10), S15	5.80
NewCastle,Pa. B4	5.80
NewCastle,Pa.(10), E5	5.20
NewHaven,Conn. D2	5.85
NewHaven,Conn. A7	5.60
Pawtucket,R.I. R3	6.45
Pawtucket,R.I.(2), N8	6.30
Riverdale,Ill.(10) A1	5.35
Rome,N.Y. R6	5.10
Sharon,Pa. S3	5.80
SparrowsPoint,Md. B2	5.10
Trenton,N.J. R5	6.45
Wallingford,Conn. W2	6.30
Warren,O.(10), T5	5.70
Warren,O. R2	5.10
Weirton,W.Va. W6	5.10
Youngstown,O.S.(10)	5.70
Youngstown,O. Y1	5.10

STRIP, Electro Galvanized

Dover, O. G6	5.50
Warren,O. T5	5.70
Weirton,W.Va. W6	5.10
Youngstown,O. S	5.70

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10)S15	12.15
Carnegie,Pa. S18	12.00
Cleveland A7	11.10
Dover,O. G6	11.90
Fontana,Calif. K1	*13.50*
Harrison,N.J. C18	12.00
Midland,Pa. C18	12.00
NewBritn.,Conn.(10)S15	12.15
Pawtucket,R.I.(1) N8	12.15
Pawtucket,R.I.(2), N8	12.15
Sharon,Pa. S3	12.00
Worcester,Mass. A7	11.70
Youngstown,O.S.	12.00

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8), A10	3.95
Warren,O. R2	4.325

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2	5.70

TIGHT COOPERAGE HOOP

Atlanta, A11	4.45
Riverdale,Ill. A1	4.30
Sharon,Pa. S3	4.55
Youngstown,O. Y1	4.45

WIRE, Merchant Quality

(6 to 8 gage)	An'ld	Galv.
AlabamaCity,Ala. R2	6.025	6.325
Aliquippa,Pa. J5	6.025	6.525
Atlanta, A11	6.325	6.675
Bartonville(10)K1	6.075	6.40
Buffalo,W12	6.225	
Cleveland, A7	6.075	6.225
CrawfordsvilleMs	6.175	6.475
Donora,Pa. A7	6.075	6.225
Duluth,Minn. A7	6.075	6.225
Fairfield,T2	6.075	6.225
Houston,Tex. S9	6.425	6.80
Johnstown,P2	6.075	6.10
Joliet,Ill. A7	6.075	6.225
KansasCity,Mo. S8	6.675	7.00
Kokomo,C16	6.375	6.425
LosAngeles,B3	7.025	
Minnequa,C10	6.325	6.70*
Monessen,P7	6.075	6.45
Palmer,W12	6.325	
Pitts,Calif. C11	7.025	7.175
Pittsburgh,(3)P12	6.475	
Rankin,A7	6.075	6.225
So.Chicago,R2	6.075	6.325
So.S.Fran.,C10	7.025	7.40*
SparrowsPt.,B2	6.175	6.55
Sterling,Ill.(1)N15	6.075	6.375
Struthers,O. Y1	6.075	6.475
Torrance,Cal. C11	7.025	
Worcester,A7	6.375	6.525

*Based on 16c zinc; 14.50c zinc, 17.5c zinc.

WIRE (16 gage) (Add 4.75 on base and extras)

	Ani'd. Stone	Galv. Stone
Aliquippa,Pa. J5	10.15	12.15
Bartonville(10)K1	10.25	12.00*
Cleveland,A7	10.25	11.55
Crawfrdsville,Ms	10.73	12.51
Fostoria,O. S1	10.40	13.00
Johnstown,B2	10.73	12.585
Kokomo,C16	10.625	12.325
Minnequa,C10	10.40	12.425*
Palmer,Mass.W12	10.25	12.15
Pitts.,Cal. C11	10.60	11.90
SparrowsPt.,B2	10.85	12.685
Sterling,(1) N15	10.73	12.15
Waukegan,A7	10.25	11.55
Worcester,A7		11.85

*Based on 16c zinc; $11.50c zinc. Includes 4.75c increase.

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	5.225
Aliquippa,Pa. J5 (42)	4.85
Atlanta, A11	5.475
Alton, Ill. L1	5.45
Bartonville,Ill. K1	5.325
Buffalo,W12	5.225
Chicago,W13	5.475
Cleveland,A7, C20	5.225
Crawfordsville,Ind. Ms	5.325
Donora,Pa. A7	5.225
Duluth,Minn. A7	5.225
Fairfield,Ala. T2	5.225
Fostoria,O. (24) S1	5.725
Houston,Sa.	5.625
Johnstown,Pa. B2	5.225
Joliet,Ill. A7	5.225
KansasCity,Mo. S8	5.825
Kokomo,Ind. C16	5.325
LosAngeles,B3	6.175
Minnequa,Colo. C10	5.475
Monessen,Pa. P7	5.475
Newark,O.S.ga.11	5.85
No.Tonawanda,B11	5.225
Palmer,Mass. W12	5.525
Pittsburg,Calif. C11	6.175
Portsmouth,O. P12	5.625
Rankin,Pa. A7	5.225
So.Chicago,Ill. R2	5.225
So.SanFrancisco,C10	6.175
SparrowsPoint,Md. B2	5.325
Sterling,Ill.(1) N15	5.225
Struthers,O. Y1	5.225
Torrance,Calif. C11	6.175
Waukegan,Ill. A7	5.225
Worcester,Mass. A7	5.525

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	6.20
Buffalo,W12 (43)	6.35
Cleveland,A7 (43)	6.85
Crawfrdsville,Ind.Ms(43)	5.70
Dover,O. G6	6.20
Fostoria,O. S1 (43)	6.00
Kokomo,Ind. C16 (43)	5.70
FranklinPark,Ill. T6(43)	6.20
Massillon,O. R8 (43)	6.85
Monessen,Pa. P16 (43)	6.35
Monessen,Pa. P7 (43)	6.40
Pawtkt,R.I.(12) N8 (43)	6.85
Trenton,N.J. R5 (43)	6.15
Worcester,Mass.A7 (43)	6.45
Worcester,Mass.T6 (43)	6.50
Worcester,Mass.W12(43)	6.65

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K1	8.50
Monessen,Pa. P16 (43)	8.50
Muncie,Ind. I-7 (43)	8.70
Roebling,N.J. R5 (43)	8.80
SparrowsPt.,Md. B2(43)	8.60
Johnstown,Pa. B2 (43)	8.50

ROPE WIRE

Alton,Ill. L1 (43)	8.75
Bartonville,Ill. K1	8.50
Buffalo,W12 (43)	8.55
Fostoria,O. S1 (43)	8.85
Johnstown,Pa. B2 (43)	8.55
Monessen,Pa. P16 (43)	8.55
Monessen,Pa. P7 (43)	8.80
Muncie,Ind. I-7 (43)	8.75
Palmer,Mass. W12 (43)	8.85
Portsmouth,O. P12 (43)	8.85
Roebling,N.J. R5 (43)	8.85
SparrowsPt.,B2 (43)	8.65
Struthers,O. Y1 (43)	8.55
Worcester,Ja. T6 (43)	8.85

(A) Plow and Mild Plow; add 0.25c for improved plow.

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5 (43)	6.25
Alton,Ill. L1 (43)	6.55
Bartonville,Ill. K1	6.64
Buffalo,W12 (43)	6.25
Cleveland,A7 (43)	6.25
Donora,Pa. A7 (43)	6.25
Duluth,Minn. A7 (43)	6.25
Fostoria,O. S1 (43)	6.25
Johnstown,Pa. B2 (43)	6.25
Millbury(12), N6 (43)	8.95
Minnequa,Colo. C10(43)	6.50
Monessen,Pa. P7 (43)	6.25
Monessen,Pa. P16	6.75
Muncie,Ind. I-7 (43)	6.45
Palmer,Mass. W12 (43)	6.55
Pittsburg,Calif. C11(43)	7.20
Roebling,N.J. R5 (43)	6.55
Portsmouth,O. P12(43)	6.25
So.Chicago,Ill. R2 (43)	6.25
So.SanFran.,C10 (43)	7.20
SparrowsPt.,Md. B2 (43)	6.35
Struthers,O. Y1 (43)	6.25
Trenton,N.J. A7 (43)	6.55
Waukegan,Ill. A7 (43)	6.25
Worcester A7, T6 (43)	6.55
Worcester,Mass. W12(43)	6.55
Worcester,Mass. J4 (43)	6.75

WIRE Upholstery Spring

Aliquippa,Pa. J5	6.275
Alton,Ill. I21	6.50
Buffalo W12	6.275
Cleveland A7	6.275
Donora,Pa. A7	6.275
Duluth,Minn. A7	6.275
Johnstown,Pa. B2	6.275
LosAngeles B3	7.225
Minnequa,Colo. C10	6.525
Monessen,Pa. P7	6.275
Monessen,Pa. P16(42)	6.40
NewHaven,Conn. A7	6.575
Palmer,Mass. W12	6.575
Pittsburg,Calif. C11	7.225
Portsmouth,O. P12	6.275
Roebling,N.J. R5	6.575
So.Chicago,Ill. R2	6.275
So.SanFrancisco C10	7.225
SparrowsPoint,Md. B2	6.375
Torrance,Calif. C11	7.225
Trenton,N.J. A7	6.575
Waukegan,Ill. A7	6.275
Worcester,Mass. A7	6.575

WIRE, Fine & Weaving (8"Coils)

Alton,Ill. L1 (43)	9.20
Bartonville,Ill. K1	9.12
Buffalo W12 (43)	8.90
Chicago W13	9.32
Cleveland A7 (43)	8.90
Crawf.sville,Ind. Ms(43)	8.90
Fostoria,O. S1 (43)	8.90
Johnstown,Pa. B2 (43)	8.90
Kokomo,Ind. C16 (43)	8.90
Monessen,Pa. P16 (43)	8.90
Muncie,Ind. I-7 (43)	9.10
Palmer,Mass. W12 (43)	9.20
Roebling,N.J. R5 (43)	9.20
Waukegan,Ill. A7 (43)	8.90
Worcstr,Mass. A7,T6(43)	9.20

WIRE, Tire Bead

Bartonville,Ill. K1	11.51
Monessen,Pa. P16 (43)	11.40
Roebling,N.J. R5 (43)	11.55

WOVEN FENCE, 9-15½ Ga. Col

AlabamaCity,Ala. R2	155
Ala City,Ala.,17-19ga R2	222
Aliquippa,Pa.9-11½ga.J5	139
Atlanta, A11	146
Bartonville,Ill.(19) K1	137
Crawfordsville,Ind. Ms	138
Donora,Pa. A7	133
Duluth,Minn. A7	133
Fairfield,Ala. T2	133
Houston,Tex. S5	144
Johnstown,Pa. B2	138
Johnstown 17ga.,67 B2	222
Joliet,Ill. A7	133
KansasCity,Mo. S4	149
Kokomo,Ind. C16	140
Minnequa,Colo. C10	146*
Monessen,Pa. P7	138
Pittsburg,Calif. C11	156
Rankin,Pa. A7	133
So.Chicago,Ill. R2	133
Sterling,Ill. (1) N15	136

*On 16c zinc; 17.5c zinc.

FENCE POSTS — Col.

Chicago(18)...Ill. C2	140
Duluth,Minn. A7	133
Franklin,Pa. F5	145
Huntington,W.Va. W7	148
Johnstown,Pa. B2	148
Marion,O. P11	140
Minnequa,Colo. C10	138
Moline,Ill. R2	136
So.Chicago,Ill. R2	133
Tonawanda,N.Y. B12	168
Williamsport,Pa. S19	158

WIRE, Barbed — Col.

AlabamaCity,Ala. R2	144
Aliquippa,Pa. J5	185
Atlanta, A11	149
Bartonville,Ill.(19) K1	146
Crawfordsville,Ind. Ms	147
Donora,Pa. A7	142
Duluth,Minn. A7	142
Fairfield,Ala. T2	142
Houston,Tex. S5	154
Johnstown,Pa. B2	146
Joliet,Ill. A7	142
KansasCity,Mo. S5	158
Kokomo,Ind. C16	149
Minnequa,Colo. C10	153*
Monessen,Pa. P7	147
Pittsburg,Calif. C11	162
Rankin,Pa. A7	142
So.Chicago,Ill. R2	144
So.SanFran. Calif. C10	167*
SparrowsPoint,Md. B2	147
Sterling,Ill.(1) N15	145

*On 16c zinc; 17.5c zinc.

BALE TIES, Single Loop — Col.

AlabamaCity,Ala. R2	132
Atlanta A11	135
Bartonville,Ill.(19) K1	132
Crawfordsville,Ind. Ms	132
Donora,Pa. A7	132
Duluth,Minn. A7	132
Fairfield,Ala. T2	132
Joliet,Ill. A7	132
KansasCity,Mo. S5	144
Kokomo,Ind. C16	134
Minnequa,Colo. C10	137
Pittsburg,Calif. C11	156
So.Chicago,Ill. R2	132
So.SanFran.,Calif. C10	156
SparrowsPoint,Md. B2	134
Sterling,Ill.(1) N15	132

TRACK BOLTS (20) Treated

KansasCity,Mo. S5(46)	9.85
Lebanon,Pa. (31) B2	9.85
Minnequa,Colo. C10	9.85
Pittsburgh P14	9.85
Pittsburgh O3	10.60

AXLES

Ind Harbor,Ind. S13	5.65
Johnstown,Pa. B2	5.65

NAILS, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	127
Aliquippa,Pa. J5	127
Atlanta, A11	130
Bartonville,Ill. (19) K1	127
Chicago,Ill. W13	127
Cleveland A9 (44)	127
Crawfordsville,Ind. Ms	127
Donora,Pa. A7	127
Duluth,Minn. A7	127
Fairfield,Ala. T2	127
Galveston,Tex. I47	134
Houston,Tex. S5	134
Johnstown,Pa. B2	127
Joliet,Ill. A7	127
KansasCity,Mo. S5	139
Kokomo,Ind. C16	129
Minnequa,Colo. C10 (44)	124
Monessen,Pa. P7	127
Pittsburg,Calif. C11	146
Portsmouth,O. P12	132
Rankin,Pa. A7	127

RAILS

Bessemer,Pa. U5	4.925
Ensley,Ala. T2	4.925
Fairfield,Ala. T2	4.925
Gary,Ind. U5	4.925
Huntington,W.Va. W7	4.925
IndianaHarbor,Ind. I-2	4.925
Johnstown,Pa. B2	4.925
Lackawanna,N.Y. B2	4.925
Minnequa,Colo. C10	4.925
Pittsburgh,Pa. P14	4.925
Seattle,Wash. B3	4.925
So.Chicago,Ill. R2	4.925
Sparrowspt.,Md. B2	4.925
Steelton,Pa. B2	4.925
Sterling,Ill.(1) N15	4.925
Torrance,Calif. C11	4.925
Williamsport,Pa. S19	4.925

*Per net ton.

TOOL STEEL

(Prices subject to 4.7% increase)

Grade	$ per lb
Regular Carbon	0.230
Extra Carbon	0.270
Special Carbon	0.325
Oil Hardening	0.350
5% Cr Hot Work	0.550
Hi-Carbon-Cr	0.635

Grade by Analysis

W	Cr	V	Co	
18	4	1		1.505
18	4	2		1.65-1.66
20	2.5	4	12	2.55-3.675
18	4	2	7	2.460
18	2.5	1	4.75	2.125
18	4	2	9	2.445-2.45
15	4	3		1.602½
9	3.25	0.5		1.01

W	Cr	V	Mo	
6	4.5	1.9	5	0.96-0.965
6	4	3	6	1.190
1.5	4	1	8.5	0.810

Tool steel producers include: A1 A8, B2 B8, C4, C9, C13, C18, D4, F2, J3, L3, M10, S8, T4, V2 and V3.

FOOTNOTES

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) Chicago or Birm. base.
(7) To jobbers, 5 cents lower.
(8) 3/16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.50c for 17 Ga. & heavier.
(15) ⅜" and thinner.
(16) 80 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for unfreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 2¾ 6¼ .56" wide.
(24) Deduct 0.20c, Timer than 13 6¼.
(25) Bar mill hands.
(26) Reinforcing mill.
(27) Lengths, to fabricators; to consumers, 5.05.
(28) Bar mill sizes.
(29) Bonderized.
(30) Add $1.00 per ton.
(31) Sheared; add 0.55c for universal mill.
(32) Not annealed.
(33) Rd or square edge.
(34) To jobbers, deduct 20c.
(35) 7.85c for cut lengths.
(36) 72" and narrower.
(37) 24" and narrower.
(38) 15 gage & lighter 60" & narrower.
(39) 16 gage & lighter 48" & narrower.
(40) 48" and narrower.
(41) Lighter than 0.062", 0.062" and heavier 0.25c higher.
(42) 4.10c for cut lengths.
(43) Plus 0.25c per 100 lb.
(44) Plus 4.7% on base and extras.
(45) Plus 15c per 100 lb.
(46) Plus 40c per 100 lb.
(47) Plus 2.2c per cwt.

STRUCTURALS

Bessemer,Pa. U5	4.925
Fairfield,Ala. T2	4.925
Ind Harbor,Ind. I-2	4.925
Joliet,Ill. U5	4.925
Lackawanna,N.Y. B2	4.925
Minnequa,Colo. C10	4.925
Steelton,Pa. B2	4.925

STANDARD TRACK SPIKES

Ind Harbor,Ind. I-2, Y1	6.65
KansasCity, Mo. S8	6.90
Lebanon,Pa. B2	6.65
Minnequa,Colo. C10	6.65
Pittsburgh,Pa.	6.65
Seattle B3	7.15
So.Chicago, Ill. R2	6.65
Struthers,O. Y1	6.65
Youngstown,O. Y2	6.65

	Std. No. 1	Std. No. 2	All No. 2	Std. Tee Rails 60 lb Under
	3.725	3.675	3.725	4.25
	3.725	3.675		4.25
				4.25
	3.725	3.675	3.725	
				5.25
				(16)4.25
	3.725	3.675		4.25
	$75.00*	$73.50*		4.75
	3.725	3.675		
				5.60

STAPLES, Polished, Stock

To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	126
Aliquippa,Pa. J5	126
Atlanta A11	129
Bartonville,Ill. (19) K1	126
Chicago W13	127
Crawfordsville,Ind. Ms	128
Donora,Pa. A7	126
Duluth,Minn. A7	126
Fairfield,Ala. T2	126
Johnstown,Pa. B2	126
Joliet,Ill. A7	126
Kokomo,Ind. C16	128
Minnequa,Colo. C10 (45)	123
Monessen,Pa. P7	127
Pittsburg,Calif. C11	145
Portsmouth,O. P12	132
Rankin,Pa. A7	126
So.Chicago,Ill. R2	126
Sparrowspt.,Md. B2	128
Sterling,Ill.(1) N15	126
Torrance,Calif. C11	146
Worcester,Mass. A7	132

NAILS, Cut (100 lb keg) to dealers (33)

Conshohocken,Pa. A3	$7.80
Wheeling,W.Va. W10	7.80

TIE PLATES

Fairfield,Ala. T2	4.775
Gary,Ind. U5	4.775
Ind Harbor,Ind. I-2	4.775
Lackawanna,N.Y. B2	4.775
Minnequa,Colo. C10	$66.50*
Pittsburg,Calif. C11	4.925
Seattle B3	4.925
Steelton,Pa. B2	4.775
Torrance,Calif. C11	4.925

*Per net ton.

JOINT BARS

Bessemer,Pa. U5	4.925
Fairfield,Ala. T2	4.925
Ind Harbor,Ind. I-2	4.925
Joliet,Ill. U5	4.925
Lackawanna,N.Y. B2	4.925
Minnequa,Colo. C10	4.925
Steelton,Pa. B2	4.925

STANDARD TRACK SPIKES

Ind Harbor,Ind. I-2, Y1	6.65
KansasCity, Mo. S8	6.90
Lebanon,Pa. B2	6.65
Minnequa,Colo. C10	6.65
Pittsburgh,Pa.	6.65
Seattle B3	7.15
So.Chicago, Ill. R2	6.65
Struthers,O. Y1	6.65
Youngstown,O. Y2	6.65

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼		1½		2		2½		3	
List Per Ft.	8.5c		11.3c		14c		17c		23c		28c		37c		27.5c		37c		58.5c		76.5c	
Pounds Per Ft.	0.85		1.13		1.68		2.28		3.00		3.76		5.21		2.73		3.68		5.82		7.62	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (†)	32.5	15.25	35.5	18.25	38	20.75	38.5	20.5	39	21	39.5	21.5	40	21.25	40	21.25						
Alton, Ill. L1 (†)	29.5	10.5	32.5	14.5	35	18	35.5	18.5	36	19.5	36.5	20	37	20.5	37	20.5						
Benwood, W. Va. W10	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5	39	21.5	39.5	22	40	21.75	40	21.75						
Etna, Pa. N2 (†)	32.5	13.25	35.5	17.25	38	20.75	38.5	20.5	39	22.25	39.5	22	40	21.75	40	21.75						
Fontana, Calif. K1 (†)	19.5	0.25	22.5	4.25	25	7.75	25.5	7.5	26	8.5	26.5	9	27	8.75	27	8.75						
Ind. Harbor, Ind. Y1 (†)	31.5	14.25	34.5	18.25	37	21.75	37.5	21	38	22	38.5	22.25	39	21.75	39	21.75						
Lorain, O. N3 (*)	32.5	22.25	35.5	26.25	38	29.75	38.5	27.25	39	28.25	39.5	28.5	40	26.25	40	26.25						
Sharon, Pa. M6	32.5	14.25	35.5	18.25	38	21.25	38.5	20.50	39	21.00	39.5	21.50	40	20.75	40	20.75						
Sparrows Pt., Md. B2	30.5	11.25	33.5	15.25	36	18.75	36.5	18.5	37	19.5	37.5	20	38	19.75	38	19.75						
Youngstown R2 (**)	32.5	16.25	35.5	20.25	38	23.75	38.5	22.75	39	23.75	39.5	24.25	40	23.25	40	23.25						
Youngstown Y1 (†)	32.5	15.25	35.5	19.25	38	22.75	38.5	22.00	39	23.00	39.5	23.50	40	22.75	40	22.75						
Wheatland, Pa. W9	32.5	13.25	35.5	16.25	38	18.75	38.5	19	39	19.5	39.5	20	40	20.25	40	20.25						

SEAMLESS STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (†)	24	6	27	8.25	27	8.25	29	10.25	29	10.25	33.75	15	33.75	15
Ambridge, Pa. N2	24	6	27	8.25	27	8.25	29	10.25	29	10.25	33.75	15	33.75	15
Lorain, O. N3 (*)	24	12.75	27	12.75	27	12.75	29	14.75	29	14.75	33.75	19.5	33.75	19.5
Youngstown Y1 (†)	24	7.50	27	9.25	27	9.25	29	11.25	29	11.25	33.75	16	33.75	16

ELECTRIC WELD STANDARD PIPE, T & C

Youngstown, R2 (**)	24	8.25	27	9.75	27	9.75	29	11.75	29	11.75	33.75	16.5	33.75	16.5

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		4	
List Per Ft	5.5c		6c		6c		92c		$1.09	
Pounds Per Ft	0.24		0.42		0.57		9.20		10.89	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Benwood, W. Va. W10	29.5	+0.25	23.25	+3.5	17.75	+7.75	33	14.25	33	14.25
Butler, Pa. F6 (†)	30.5	1.25	25	+1.75	20	+5.5	...	...	...	...
Etna, Pa. N2 (†)	30.5	1.25	25	+1.75	20	+5.5	33	14.25	33	14.25
Sharon, Pa. M6 (†)	29.5	+1.75	23	+2.25	18	+5.25	...	...	...	...
Sharon, Pa. S1 (†)	30.5	1.25	25	+1.75	20	+5.5	...	...	...	...
Sparrows Pt., Md. B2	28.5	+0.75	23	+3.75	18	+7.50	...	...	...	...
Youngstown R2 (**)	...	...	...	...	...	...	33	15.75	33	15.75
Wheatland, Pa. W9	28.5	+0.75	23	+3.75	18	+7.50	...	...	...	...

Galvanized pipe discounts based on zinc price of: (†), 11c; (*), 12.50c; (**), 11.50c; (‡), 5c, with discounts adjusted depending on price of zinc at time of shipment.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft., inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.	Elec. Weld C.D.
1	13	14.19	16.71-17.77	16.20	16.20
1¼	13	16.97	19.80-21.26	16.46	19.19
1½	13	18.22-18.77	22.08-22.82	18.19	21.41
1¾	13	20.35-21.35	24.92-25.49	20.69	24.35
2	13	22.81-23.93	27.94-28.58	23.19	27.28
2¼	13	25.69-26.66	31.38-32.18	25.84	30.42
2½	12	28.40-29.36	34.55-35.58	28.46	33.50
2¾	12	31.28-32.17	37.83-39.19	31.19	36.67
2¾	12	33.87-34.82	40.69-42.44	33.65	38.86
3	12	35.78-36.87	42.11-44.53	34.98	40.82

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants; per cent off list for less than case lots to consumers)

6 in. and shorter:

½-in. & smaller diam.	11
⅝-in. & ⅞-in.	15
1-in. and larger	14
Longer than 6 in.:	
All diams.	8
Lag bolts, all diams.:	
6 in. and shorter	19
over 6 in. long	16
Ribbed Necked Carriage	15
Blank	30
Plow	30
Step, Elevator, Tap and Sleigh Shoe	18
Tire Bolts	8
Boiler & Fitting-Up Bolts	28

NUTS

	Reg. Hvy.
H.P. & C.P. Square:	
½-in. & smaller	10 10
⅝-in. & ⅞-in.	8 4
1-in.-1¼-in.	4 4
1⅜-in. & larger	22 1
H.P. Hex.:	
½-in. & smaller	12 3
⅝-in. & ⅞-in.	8 3
1-in.-1¼-in.	4 3
1⅜-in. & larger	4 3
C.P. Hex.:	
½-in. & smaller	22 18
⅝-in. & ⅞-in.	19 13
1-in. & 1¼-in.	15 8
1⅜-in. & larger	2 4

SEMIFINISHED NUTS

American Standard

(Per cent off list for less than case or keg quantities)

	Reg.	Hvy.
½-in. & smaller	33	26
⅝-in. & ⅞-in.	27	19
1-in.-1¼-in.	21	11
1⅜-in. & larger	list	list
	Light	
½-in. & smaller	33	26
⅝-in. to ⅞-in.	26	
1-in. to 1¼-in.	18	

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter	37
1 in. and smaller diam. x over 6 in.	24

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	34
¼-in. diam & larger	14
N.F. thread, all diams.	8

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	17.5 & 10
Plated finishes	30 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:	
⅝-in. & smaller	10
¾-in. through 1 in.	26
Longer than 6 in.:	
⅝-in. and smaller	24
¾-in. through 1 in.	2

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ½-in. larger	8.50c
⅝-in. under	40 off

ELECTRODES

(Threaded, with nipples, unboxed, f.o.b. plants)

GRAPHITE

Inches Diam.	Length	Cents per lb
17-18	60-72	17.85
8 to 16	48-60-72	17.85
7	48-60	19.57
6	48-60	20.95

CARBON

35-40	110	8.63
30	65-84-110	8.63
24	72 to 104	8.63
17 to 20	34-90	8.63

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron:	
98+% Fe, annealed	18.00
Unannealed	14.50
Swedish, c.i.f. N.Y., c.l. in bags	10.00
Electrolytic iron:	
Annealed, 99.5+% Fe	42.50
Unannealed (99+% Fe)	36.50
Unannealed (99+% Fe, minus 325 mesh)	53.50
Powder Flakes	48.50
Carbonyl Iron:	
97.9-98.8% size 5 to 10 microns	$3.00-14.8 00
Aluminum:	
Carlots, freight allowed	31.00
Atomized, 500 lb drums, freight allowed	33.00
Antimony, 500 lb lots	74.00
Brass, 20-ton lots	31.00-34.25
Bronze, 10-ton lots	51.25-66.00
Phosphor-Copper, 2-ton lots	56.00
Copper:	
Electrolytic	37.25
Reduced	35.25
Lead	25.50
Magnesium	75.00-85.00
Manganese:	
Minus 100 mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	62.00
Nickel unannealed	86.00
Nickel-Silver 5-ton lots	46.00
Silicon	38.50
Solder	85.00
Stainless Steel, 302	85.00
Zinc, 10-ton lots	18.00-31.00
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over	5.80
Less than 1000 lb	6.00
Molybdenum:	
99.9%, minus 200 mesh	3.24
Chromium, electrolytic 99.9% Cr min.	3.50

Plus cost of metal.

STAINLESS STEEL

(Add 4.7% to extras where new extra cards have not been issued)

Type	Sheets	C.R. Strip	Bars Wire Structurals
301	44.25	36.50	33.75
302	44.50	36.75	34.00
303	46.50	43.50	36.50
304	46.50	41.75	35.50
305	60.50	59.25	48.25
316	61.50	63.50	53.00
321	53.00	52.00	40.00
347	58.00	56.50	44.75
410	39.00	32.75	27.50
416	40.00	40.00	28.00
420	47.00	50.25	33.50
430	41.50	33.25	28.00
501	29.25	27.75	15.25

Bait, Types 301-347 and 430 sheets, except 303 and 305 B2.

Brackenridge, Pa. sheets A4 quotes slight variations on Types 301-347.

Bridgeville, Pa., bars, wire, sheets & strip U4.

Butler, Pa. sheets and strip except Types 303, 305, 416, 420, 501 & 502 A10.

Carnegie, Pa., sheets and strip except Types 303, 416, 501 & 502 S18.

Cleveland, strip A7.

Detroit, strip M1 quotes 34.00c on Type 301; 36.50c 302; 38.50c, 304; 53.50c, 316; 52.00c, 347; 30.50c, 410; 31.00c, 430.

Dunkirk, N. Y., bars, wire A4 quotes slight variations on Types 301-347.

Duquesne, Pa., bars U5.

Fort Wayne, Ind., bars and wire, except 501 & 502 J6 quotes slight variations on Types 301-347.

Gary, Ind., sheets except Type 416 U5.

Harrison, N. J., strip and wire C18.

Harrison, N. J., wire, Type 302, 33.00c; Type 304, 34.50c; Type 316, 51.50c, including 4.7% increase.

Massillon, O., all items, R2.

McKeesport, Pa., strip Type 410; bars & wire Types 410 through 430 and 31 2.2c on Type 302, 33.75c on 303, 32.75c on 304, 48.75c on 316, 36.75c on 321, 41.25c on 347 F2.

McKeesport, Pa. bars, sheets except Type 416 U5.

Middletown, O., sheets and strip except Types 303, 416, 420, 501 and 502 A10.

Midland, sheets & strip C18.

Munhall, Pa., bars U5.

Muncie, Ind., wire I-7 quotes Types 302, 304, 430.

Pittsburgh, sheets C18.

Reading, Pa., strip except 31.25c on Type 301 and 56.00c on 305; bars, except 31.50c on Type 301 and 42.25c on 305 C8.

Sharon, Pa., strip except Types 303, 305, 416, 501 502 and 31.25c on Type 301 S3.

So. Chicago, bars, shapes U5.

Syracuse, N. Y., bars, wire & structurals C18.

Titusville, Pa., bars U4.

Wallingford, Conn., strip W2 quotes 0.25c higher.

Washington, Pa., bars, sheets & strip J3.

Washington, Pa., Types 301 through 347 sheets & strip except 303, 305, 316 sheets 62.00c; strip 64.00c W4.

Watervliet, N. Y., structurals & bars A4.

Waukegan, bars & wire A7.

West Leechburg, strip A4.

Youngstown, strip C8.

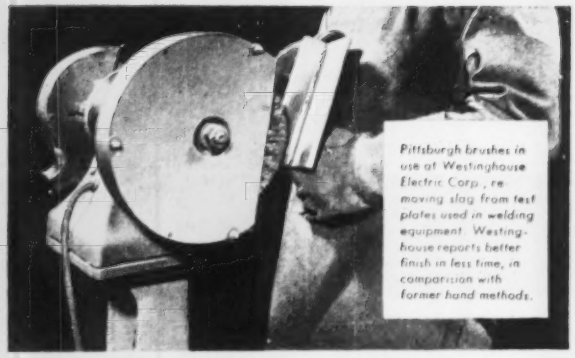
CLAD STEELS

(Cents per pound; add 4.7% to base price and extras)

Cladding Stainless	Plates Carbon Base 10%	Plates Carbon Base 20%	Sheets Carbon Base 10%	Sheets Carbon Base 20%	Sheets Copper Base Both Sides
302	...	...	19.75	20.25-27.50	77.00
304	25.00	29.50	24.50	27.50-27.75	77.00
305	30.50	35.00	...	...	...
310	36.50	41.00	...	...	144.00
316	29.50	34.00	25.00	31.62-36.50	...
317	34.50	39.00	...	...	...
318	33.50	38.00	...	...	...
321	26.50	31.00-32.00	22.00	33.00	111.00
347	27.50	32.00	24.00	33.50-37.83	139.00
405	24.25	27.75	...	...	...
410	20.75	27.25	...	...	...
Nickel	43.50	46.15	...	...	...
Inconel	44.25	54.18	...	...	165.00
Monel	34.93	46.28	...	...	...
Copper	...	...	11.00	...	...

	Strip Carbon Base Cold-Rolled 10%	Strip Carbon Base Cold-Rolled Both Sides	Strip Carbon Base Hot-Rolled 10%	Strip Carbon Base Hot-Rolled Both Sides
Nickel	41.00	54.00	...	...
Copper*	23.70	29.65	20.20	26.40

*Deoxidized. Production points: Stainless plates, sheets, Conshohocken, Pa. A3 and New Castle, Ind. I-4; stainless clad plates, Claymont, Del. C22, Coatesville, Pa. I-2 and Washington, Pa. J3; nickel, inconel, monel-clad plates, Coatesville I-2; nickel, copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie, Pa. A13.


Pittsburgh brushes in use at Westinghouse Electric Corp., removing slag from test plates used in welding equipment. Westinghouse reports better finish in less time, in comparision with former hand methods.

Replace hand finishing with power-driven Pittsburgh Brushes for

Better Cleaning Lower Labor Costs Fewer Rejects

—as these companies did:

Removal of imbedded slag in welding test plates formerly was done by hand at the Westinghouse Electric Corp., Trafford, Pa., using a wire brush and welder's hammer. Pittsburgh brushes, powered by a direct-drive ½ h.p. motor, now remove more slag in less time, and produce a better finish. In addition, Westinghouse reports their Pittsburgh brushes "stand up better than average in use."

Complete cleaning of dried concrete, rust and scale from steel frames used in concrete forming is essential prior to re-using the forms. Pittsburgh wire brushes were installed at the Universal Form Clamp Co., Chicago. Working on a conveyor-fed machine, the Pittsburgh brushes now remove all foreign material at a rate of 50 pieces per hour, replacing former laborious hand brushing and scraping.

De-scaling preheated bar stock at the Dominion Forge & Stamping Co., Ltd., Canada, was formerly done by hand scraping. This never did a complete job, and inclusions resulted which produced defective forgings. Pittsburgh brushes, on specially-designed machines, now do the job, and have "increased efficiency, decreased the amount of scrap, improved work quality, and saved labor."

WRITE TODAY FOR FREE BOOKLET!

Write today for a free copy of our booklet that shows, through actual case histories, how Pittsburgh cuts brushing costs. Address: PITTSBURGH PLATE GLASS COMPANY, *Brush Div.*, Dept. W-11, 3221 Frederick Avenue, Baltimore 29, Maryland.

PITTSBURGH

Power Driven

BRUSHES

BRUSHES • PAINTS • GLASS • CHEMICALS • PLASTICS • FIBER GLASS

PITTSBURGH PLATE GLASS COMPANY

IN CANADA: CANADIAN PITTSBURGH INDUSTRIES LIMITED

COP-R-LOY PIPE-SHEETS

Ductillite

THE MODERN TIN PLATE

LA BELLE CUT NAILS

WHEELING STEEL CORPORATION

WHEELING, WEST VIRGINIA

H&G Insert Chaser DIE HEADS

famous for accuracy and straightness of threads, low chaser costs, less downtime, more pieces per day.

THE EASTERN MACHINE SCREW CORP., 22-42 Barclay Street, New Haven, Conn.

Pacific Coast Representative: A. C. Berbringer, 334 N. San Pedro St., Los Angeles, California. Canada: F. F. Barber Machinery Co., Toronto, Canada.

To lower your Overhead..

BROWNING ELECTRIC TRAVELING CRANES AND HOISTS

up to 125-TON CAPACITY

VICTOR R. BROWNING & CO., INC. WILLOUGHBY (Cleveland), OHIO

IT'S EASY as ABC

★

To reach the metalworking market. Just list the materials or machines you have for sale in the "Equipment–Materials" section and STEEL will do the rest. It is read weekly by specifiers and buyers in the plants which do more than 92% of the metalworking industry's business. For rates and further details, write STEEL, Penton Building, Cleveland 13, Ohio.

Tubular Goods . . .

Tubular Goods Prices, Page 205

Boston—Pipe distributors are not taking more than 40 to 50 per cent of buttweld offered and it is becoming increasingly difficult to dispose of the balance by direct shipments. Third quarter allotments of this grade are higher. Seamless, notably in the four to six-inch size range, is being absorbed, and most jobbers want more tonnage. Other tubular products, with the exception of light wall carbon tubing, are also tight. Little additional seamless tonnage is offered for third quarter.

Seattle—Pipe sales agencies report activity in carlot sales. Last week more than 600 tons of cast iron water pipe were placed while bids were received on 350 tons for Renton, Wash.

Scrap . . .

Scrap Prices, Page 208

Philadelphia—Small repeat business in the major grades of steel scrap and in borings and turnings reflects a generally easier scrap market. No. 2 bundles are especially weak and may now be quoted nominally at $35 to $36 delivered. No. 1 heavy melting is off about $1 to $43 to $44, delivered, and No. 2 heavy melting is down similarly to $39 to $40. No. 1 bundles is unchanged at $44 to $45, but No. 1 busheling is off approximately $1 to $43 to $44.

Similar reductions are noted in other grades.

Washington—Stocks of purchased scrap held by consumers at the end of February were 4,846,000 gross tons, according to the Bureau of Mines. This was an increase of 98,000 tons over stocks at the end of January and 1,682,000 tons more than at the end of February, 1952.

Home scrap stocks on Feb. 28 totaled 1,157,000 tons, a slight increase from the preceding month.

Preliminary figures on stocks held by suppliers as of the end of February indicate a slight decrease from January. Dealers and auto wreckers had 991,000 gross tons, producers and railroads 142,000.

Total preliminary domestic stocks of scrap were 7,136,000 tons at the end of February. Pig iron stocks held by consumers totaled 1,684,000 gross tons, an increase of 30,000 over January, and 109,000 over the like date a year ago.

Preliminary figures show consumption of ferrous materials (scrap and pig iron) during February totaled 10,007,000 gross tons, a decrease of 2,034,000 from January.

Purchased scrap consumption was 2,818,000 tons, a decrease of 241,000, home scrap use 2,984,000, drop of 211,000 tons from the previous month, while pig iron consumption amounted to 4,205,000 tons, lowest monthly consumption since the steel strike of June and July last year.

Boston—Steelmaking grades of scrap are quoted below former ceiling prices, top grades of heavy melting steel having resisted the decline the longest. No. 2 bundles, turnings and borings are weaker. New buying is light with inventories comfortable and most consumers satisfied. Shipments of cast scrap are slow, and while numerous consumers have stocks hardly normal for capacity melt, reserves are sufficient for current operations.

New York—While brokers continue to pay $37 for No. 1 heavy melting steel and $32.50 to $33 for No. 2 heavy melting, they have dropped their prices on machine shop turnings to $21.50 to $22 and on mixed borings and turnings to $24.50 to $25. Also, they have reduced prices on shovel turnings to $24.50 to $25. Low phos structural and plate are unchanged at $40.50. Cast grades are unchanged. The easier tone reflects improved collections with less pressure from consumers. General pattern of the market is becoming clearer in contrast with the highly mixed situation which prevailed three and four weeks ago.

Buffalo—Decidedly weaker tendencies swept through the scrap market here last week following reduction in prices. Buyers, temporarily at least, seem to favor a side line position. Supplies, however, are fair to good. Augmenting bearish sentiment is the first fleet of barges for the season enroute here from the eastern seaboard.

Pittsburgh—The scrap market here is more lethargic than it was last week. There is some indication the largest producer may announce some releases late this month, but currently it is sitting tight. Another company does not expect to be in the market until the middle of May or early June.

Reflection of the softer market is found in a slight drop in prices. No. 1 heavy melting has declined to $39 to $40, No. 2 bundles to $35 to $36, machine shop turnings $29 to $30, mixed borings $29 to $30, cut structurals $49 to $50, punchings and plate scrap $49 to $50.

Cleveland—High degree of uncertainty prevails in the scrap market in this area with the mills buying sparingly. They are taking in tonnage on contracts but rejections are high with mill inventories comfortable and adequate to support current high-level operations.

Sentiment among brokers and dealers is mixed. Some, anticipating early resumption of active buying by the mills, expect prices to hold pretty well at current levels. Others, however, fear the worst, especially should a Korean truce be negotiated followed by cutbacks or a stretchout in defense spending.

Prices on the better grades of scrap appear to be holding. Brokers' offering prices to dealers are as low as $39 on track for No. 1 heavy melting, equal to about $41.50 to $42.50 delivered at which level at least one large dealer here would accept a representative mill order. Representative mill sales are absent however, and some trade authorities insist the market is still close to the old OPS ceilings. No. 2 grades are weak, as are turnings, and still lower prices are expected in some trade circles.

Detroit—With auto production being pushed at high rate, scrap is pouring back to the furnaces in volume. As a result there is a marked decline in demand for dealer material, particularly for the No. 2 grades and turnings. Trade observers here see a further drop in scrap prices over the next few weeks. Unchanged prices actually represent lower quotations in that they are applied on quality grades which formerly commanded premiums.

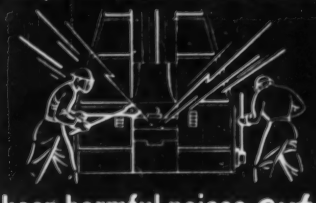
Cincinnati—Scrap is plentiful and predictions are being made that turnings and borings may decline in price before the month ends. The market is quiet price wise. A lot of scrap is moving, the mills getting all they require.

Chicago—The scrap market is definitely on the soft side as result of light demand for virtually all grades. Steel mills have good inventories and

(*Turn to page* 210)

LEWIS
TRAVEL-CUT
automatic, high-speed
heavy-duty
WIRE STRAIGHTENING
and
CUTTING MACHINES
Sizes for .012" to 3/4" WIRE
ROUNDS & SHAPES
THE LEWIS MACHINE CO.
3450 E. 76 ST., CLEVELAND, O.

M·S·A EAR DEFENDERS



keep harmful noises *out!*

If your workers "can't hear themselves think," chances are *you'll* hear about it in lowered production and damaged hearing.

Loud industrial noises sap energy, interfere with job concentration, and sometimes result in serious hearing loss. M.S.A. Ear Defenders block out these costly noises, yet allow wearer to hear warning signals, speech, and telephone conversation.

M.S.A. Ear Defender design insures comfortable fit; complete closure of ear canal; easy to insert, remove. Ear Defenders are easily cleaned with soap and water. Convenient carrying case keeps them clean in pocket. Write for details.

MSA
Mine Safety Appliances Co.
Braddock, Thomas & Meade Sts.
Pittsburgh 8, Pa.

IRON AND STEEL SCRAP

Consumer prices, per gross ton, except as otherwise noted, including broker's commissions, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Apr. 16	$13.42
Apr. 9	43.75*
Mar. avg.	44.13
Apr., 1952	43.00
Apr., 1948	40.41

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania. *Revised.

PITTSBURGH

(Delivered consumer plant)

No. 1 heavy melting	44.00*
No. 2 heavy melting	*39.00-40.00*
No. 1 bundles	44.00*
No. 2 bundles	*45.00-46.00*
No. 1 busheling	44.00*
Machine shop turnings	*29.00-30.00*
Mixed borings, turnings	*29.00-30.00*
Short shovel turnings	34.00-35.00*
Cast iron borings	34.00-35.00*
Cut structurals	*49.00-50.00*
Heavy turnings	44.00*
Punchings & plate scrap	*49.00-50.00*
Electric furnace bundles	46.00*

Cast Iron Grades

No. 1 cupola	*46.00-47.00*
Charging box cast	44.00-45.00
Heavy breakable cast	*42.00-43.00*
Unstripped motor blocks	40.00-41.00
No. 1 machinery cast	51.00-52.00

Railroad Scrap

No. 1 R.R. heavy melt.	*46.00-47.00*
Rails, 2 ft. and under	*55.00-56.00*
Rails, 18 in. and under	*57.00-58.00*
Rails, random lengths	53.00-54.00
Railroad specialties	*54.50-55.50*

*Plus applicable freight spring-boards from other areas.

CLEVELAND

(Delivered consumer plant)

No. 1 heavy melting	41.50-42.50*
No. 2 heavy melting	40.50-41.50*
No. 1 bundles	41.50-42.50*
No. 2 bundles	*47.50-48.00**
No. 1 busheling	41.50-42.00*
Machine shop turnings	29.00-30.00*
Mixed borings, turnings	32.00-33.00*
Short shovel turnings	32.00-33.00*
Cast iron borings	32.00-33.00*
Low phos.	48.00-49.00*
Structural & plate	51.00-52.00
Alloy free, short shovel turnings	36.00-37.00*
Electric furnace bundles	*45.00-46.00**

Cast Iron Grades

No. 1 cupola	*46.00-47.00*
Charging box cast	*45.00-46.00*
Stove plate	45.00-46.00
Heavy breakable cast	44.00-45.00
Unstripped motor blocks	*43.00-44.00*
Brake shoes	46.00-47.00
Clean auto cast	*51.00-52.00*
No. 1 wheels	46.00-47.00
Burnt cast	40.00-41.00
Drop broken machinery	*48.00-49.00*

Railroad Scrap

No. 1 R.R. heavy melt.	*48.00-49.00*
R. R. Malleable	50.00-51.00
Rails, 3-ft. and under	58.00-60.00
Rails, 18-in. and under	61.00-62.00
Rails, random lengths	56.00
Cast steel	51.00-52.00
Railroad specialties	*54.00-54.00*
Uncut tires	52.00-53.00
Angles, splice bars	54.00-55.00
Rails, rerolling	56.00

*Plus applicable freight spring-boards from other areas. Prices on steel grades are nominal.

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting	41.50-42.50*
No. 2 heavy melting	40.50-41.00*
No. 1 bundles	41.50-42.50*
No. 2 bundles	39.50-40.00*
Machine shop turnings	29.00-30.00*
Short shovel turnings	32.00-33.00*
Cast iron borings	32.00-33.00*
Low phos.	48.00-49.00*
Electric furnace bundles	*45.00-46.00**

Railroad Scrap

No. 1 R.R. heavy melt.	46.00-47.00

*Plus applicable freight spring-boards from other districts. Prices on steel grades are nominal.

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting	*43.00-44.00*
No. 2 heavy melting	*39.00-40.00*
No. 1 bundles	44.00-45.00
No. 2 bundles	38.00-39.00
No. 1 busheling	*43.00-44.00*
Machine shop turnings	*40.50-41.50*
Mixed borings, turnings	*44.00-45.00*
Short shovel turnings	*45.00-46.00*
Structurals & Plate	*46.50-47.50*
Heavy turnings	*42.50-43.50*
Compacts, springs, wheels	52.00

Cast Iron Grades

No. 1 cupola	*41.00-42.00*
Charging box cast	*44.00*
Heavy breakable cast	*43.00-44.00*
Unstripped motor blocks	*42.00-44.00*
Drop broken machinery	*48.00-50.00*

NEW YORK

(Brokers' Buying Prices)

No. 1 heavy melting	37.00
No. 2 heavy melting	32.50-33.50
No. 2 bundles	*41.00-42.00*
Machine shop turnings	*21.50-22.00*
Mixed borings, short turnings	*24.50-25.00*
Low phos. (structural & plate)	*40.50*
Shovel turnings	*24.50-25.00*

Cast Iron Grades

No. 1 cupola	39.00-40.00
Unstripped motor blocks	28.00

BOSTON

(Brokers' Buying Prices; f.o.b. shipping points)

No. 1 heavy melting	34.17
No. 2 heavy melting	32.17
No. 1 bundles	34.17
No. 2 bundles	30.17
Machine shop turnings	22.17-23.17
Mixed borings, turnings	21.17
Short shovel turnings	25.17
No. 1 cast	34.00-35.00
Mixed cupola cast	32.00-33.00
No. 1 machinery cast	46.00-47.00

DETROIT

No. 1 heavy melting	**39.00-40.00**
No. 2 heavy melting	37.50-38.00
No. 1 bundles	**40.00-41.00**
No. 2 bundles	*40.00-41.00*
No. 1 busheling	40.00-41.00
Machine shop turnings	*21.50-22.00*
Mixed borings, turnings	*23.00-23.50*
Short shovel turnings	*23.00-23.50*
Punchings & plate scrap	*42.00-43.00*

Cast Iron Grades

No. 1 cupola	**47.50**
Charging box cast	**40.00-42.00**
Stove plate	43.00-44.00
Unstripped motor blocks	*50.00*
Clean auto cast	50.00
Malleable	48.00

CINCINNATI

(Delivered consumer plant)

No. 1 heavy melting	45.50
No. 2 heavy melting	42.00
No. 1 bundles	45.50
No. 2 bundles	40.00
No. 1 busheling	45.50
Machine shop turnings	30.00
Mixed borings, turnings	31.00*
Short shovel turnings	31.00*
Cast iron borings	31.00*
Structural & plate, 3 ft.	47.00

Cast Iron Grades

No. 1 cupola	45.00
Charging box cast	40.00
Stove plate	36.00*
Burnt cast	36.00*
Heavy breakable cast	38.00
Unstripped motor blocks	34.00
Brake shoes	37.00*
Clean auto cast	43.00
Drop broken machinery	49.00

Railroad Scrap

No. 1 R.R. heavy melt.	*45.00-46.00*
Malleable	*47.00*
Rails, 18-in. and under	*58.00-59.00*
Rails, random lengths	*49.00*
Rails, rerolling	52.00

*F.o.b. shipping point.

CHICAGO

No. 1 heavy melting	*42.50-43.00**
No. 2 heavy melting	*39.00-40.00**
No. 1 bundles	43.50-44.00*
No. 2 bundles	*37.00-38.00**
No. 1 busheling	42.50-43.00*
Machine shop turnings	*23.00-24.00**
Mixed borings, turnings	*23.00-24.00**
Short shovel turnings	*24.00-25.00**
Cast iron borings	*23.00-24.00**
Cut structurals	*46.00-47.00**
Electric furnace bundles	*45.00-46.00**

Cast Iron Grades

No. 1 cupola	*42.00-43.00*
Stove plate	38.00-40.00
Unstripped motor blocks	38.00-40.00
Clean auto cast	48.00-50.00
Drop broken machinery	46.00-48.00

Railroad Scrap

No. 1 R.R. heavy melt.	*45.00-47.00*
R.R. Malleable	45.00-47.00
Rails, 2 ft. and under	55.00-57.00
Rails, 18-in. and under	57.00-59.00
Angles, splice bars	52.00-54.00
Rails, rerolling	*52.00*

*Plus applicable freight spring-boards from other areas.

BIRMINGHAM

No. 1 heavy melting	37.00-38.00
No. 2 heavy melting	*34.50-35.50*
No. 1 bundles	37.00-38.00
No. 2 bundles	*32.50-33.50*
No. 2 busheling	35.00-36.00
Machine shop turnings	26.00-27.00
Mixed borings, turnings	31.00-32.00
Short shovel turnings	30.00-31.00
Cast iron borings	30.00-31.00
Cut structurals	41.00-42.50
Heavy turnings	38.00
Punchings & plate scrap	41.00-41.50
Electric furnace bundles	39.00-40.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	*41.00-42.00*
Charging box cast	35.00-36.00
Stove plate	*36.00-37.00*
Heavy breakable cast	33.00-34.00
Unstripped motor blocks	34.00-35.00
Brake shoes	41.00
Clean auto cast	52.00
No. 1 wheels	46.00-47.00
Burnt cast	41.00
Drop broken machinery	42.00-43.00

Railroad Scrap

No. 1 R.R. heavy melt.	38.00-39.00
Malleable	nom.
Rails, 2-ft. and under	46.00-47.00
Rails, 18-in. and under	46.00-47.00
Rails, random lengths	42.00-43.00
Cast steel	44.00
Uncut tires	43.00
Angles, splice bars	46.00-47.00
Rails, rerolling	46.00-47.00

ST. LOUIS

(Brokers' Buying Prices)

No. 1 heavy melting	39.00
No. 2 heavy melting	36.00
No. 1 bundles	40.00
No. 2 bundles	37.00
Machine shop turnings	27.00-28.00
Short shovel turnings	29.00-30.00

Cast Iron Grades

No. 1 cupola	*44.00*
Charging box cast	39.00-41.00
Heavy breakable cast	36.00-38.00
Unstripped motor blocks	33.00-35.00
Brake shoes	41.00
Clean auto cast	*44.00*
Burnt cast	37.00-39.00

Railroad Scrap

Malleable	40.00
Rails, 18 inch and under	*58.00*
Rails, random lengths	50.00-52.00
Uncut tires	*46.00*
Angles, splice bars	48.00-49.00
Rails, rerolling	50.00

BUFFALO

No. 1 heavy melting	*$45.00-46.00*
No. 2 heavy melting	41.50-42.00
No. 2 bundles	39.50-40.00
No. 1 bundles	43.00-44.00
No. 1 busheling	43.00-44.00
Machine shop turnings	32.00-32.50
Mixed borings, turnings	36.00-36.50
Short shovel turnings	36.50-37.00
Low phos.	48.50-49.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	42.50-43.00
Drop broken machinery	45.50-46.00

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting	33.00
No. 2 heavy melting	29.00
No. 1 bundles	32.00
No. 2 bundles	26.00
Machine shop turnings	15.00
Mixed borings, turnings	15.00
Short shovel turnings	15.00
Electric furnace, No. 1	40.00-41.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	40.00
Heavy breakable cast	36.00-38.00
Unstripped motor blocks	29.00
No. 1 wheels	38.00-40.00

Railroad Scrap

Rails, random lengths	38.00

SAN FRANCISCO

No. 1 heavy melting	30.00
No. 2 heavy melting	26.00
No. 1 bundles	29.00
No. 2 bundles	24.00
No. 1 busheling	30.00
Machine shop turnings	12.00
Mixed borings, turnings	29.00
Short shovel turnings	29.00
Cast iron borings	29.00
Cut structurals	38.00
Heavy turnings	34.00
Punchings & plate scrap	37.50
Electric furnace bundles	37.00

Cast Iron Grades

No. 1 cupola	*49.00*
Charging box cast	47.00
Stove plate	46.00
Heavy breakable cast	45.00
Unstripped motor blocks	41.00
Brake shoes	41.00
Clean auto cast	52.00
No. 1 wheels	47.00
Burnt cast	41.00
Drop broken machinery	52.00

Railroad Scrap

No. 1 R.R. heavy melt.	37.00
Malleable	55.00
Rails, 3-ft. and under	42.00
Rails, 18-in. and under	45.00
Rails, random lengths	39.00
Cast steel	40.00
Uncut tires	39.00
Angles, splice bars	42.00
Rails, rerolling	44.00

LOS ANGELES

No. 1 heavy melting	30.00
No. 2 heavy melting	26.00
No. 1 bundles	29.00
No. 2 bundles	24.00
Machine shop turnings	12.00

Cast Iron Grades (F.o.b. Shipping Point)

No. 1 cupola	38.00-41.00

HAMILTON, ONT.

(Delivered Prices)

Heavy Melt	$35.50
No. 1 Bundles	35.50
No. 2 Bundles	35.50
Mechanical Bundles	31.50
Mixed Steel Scrap	31.50
Mixed Borings, Turnings	28.50
Rails, Remelting	35.50
Rails, Rerolling	38.50
Busheling	28.00
Busheling new factory: Prep'd	33.50
Unprep'd	31.50
Short Steel Turnings	28.50

Cast Iron Grades

No. 1 Machinery Cast	50.00

† F.o.b., shipping point.

SCRAP PRESCRIPTIONS EXPERTLY FILLED

Compounding Scrap Prescriptions for Mills & Foundries Since 1889

Regardless of your scrap need, and individual specifications, Luria Brothers and Company, Inc. have the background, knowledge, organization and will to solve your problem competently . . . assuring the maximum production at the lowest cost.

Our offices, strategically located at the very fingertips of the steel industry, are ready to assume your every iron and steel scrap problem.

CONSULT OUR NEAREST OFFICE FOR THE PURCHASE AND SALE OF SCRAP

LURIA BROTHERS AND COMPANY, INC.

MAIN OFFICE
LINCOLN-LIBERTY BLDG.
Philadelphia 7, Penna.

PLANTS

LEBANON, PENNA. DETROIT (ECORSE), MICHIGAN
READING, PENNA. PITTSBURGH, PENNA.
MODENA, PENNA.
ERIE, PENNA.

OFFICES

BIRMINGHAM, ALA. DETROIT, MICH. PITTSBURGH, PENNA.
BOSTON, MASS. HOUSTON, TEXAS PUEBLO, COLORADO
BUFFALO, N. Y. LEBANON, PENNA. READING, PENNA.
CHICAGO, ILLINOIS LOS ANGELES, CAL. ST. LOUIS, MO.
CLEVELAND, OHIO NEW YORK, N. Y. SAN FRANCISCO, CAL.
SEATTLE, WASH.

LEADERS IN IRON AND STEEL SCRAP SINCE 1889

Scrap . . .

(Continued from page 207)

are buying sparingly according to needs. Most top grades continue to bring former OPS ceilings but secondary grades are being sold at new low prices. No. 2 heavy melting is down $2, No. 2 bundles are off $1.50 and machine shop turnings have brought $2 less. In addition, No. 1 railroad heavy melting brings $1 less and rerolling rails have sold for $3 below last acquisitions.

St. Louis—Majority of scrap orders for April are in. Result of limited placements is a general softening of prices, including a sharp drop in No. 2 bundles, down $2 to $3. Melting steel dropped around $1. The lower levels are expected to hold until May 1 or possibly beyond, due to failure of one large consumer to announce a regular buying program. Rail offerings, formerly sparse, have picked up as the roads begin seasonal maintenance work. The cast market remains extremely slow.

Birmingham—Steelmaking operations here continue above rated capacity at 101 per cent, but demand pressure for scrap is little changed. Further easiness has developed in some grades with No. 2 heavy melting now quoted $34.50 to $35.50 and No. 2 bundles $32.50 to $33.50.

Los Angeles—The scrap market continues in the doldrums. Influx of material into dealers' yards is 40 per cent of normal and movement to mills is tapering. Trade observers attach great significance to an export license issued by the Office of International Trade to a local dealer who pleaded "economic hardship".

San Francisco—No. 1 cupola cast advanced $1 a ton last week on top of a 50 cent gain in the preceding week to bring the price to $39 a ton delivered. Dealers ascribe the advance to "more realistic" pricing, declaring the previous levels were too low. Steel grades continue unchanged in price. Deliveries are steady.

Seattle—The higher price levels recently established have brought out a satisfactory volume of good grade steel scrap. No offshore shipments are enroute. Cast iron scrap is in surplus supply and the larger buying interests are out of the market. Indicating price trends, 800 tons of unprepared, including ship plates and good grade material, were sold by the Puget Sound Navy Yard on a bid of $30.07 gross, Bremerton. Another lot, prepared, the larger proportion electric furnace scrap, was bid in at $33.

Canada . . .

Toronto, Ont.—Production of primary iron and steel shapes in Canada during January totaled 418,122 net tons, comparing with 393,805 in December, and 437,287 in January, 1952. Shipments for sale amounted to 273,355 net tons, against 258,722 in the preceding month and 266,425 in the like month of last year.

January shipments included 19,568 tons of semifinished; 22,402 tons of structurals; 21,638 tons of plates; 17,880 tons of rails; 7717 tons of tie plates and track material; 44,926 tons of hot-rolled bars; 18,296 tons of pipes and tubes; 22,456 tons of wire rods; 33,973 tons of black sheets; 9110 tons of galvanized sheets; 6907 tons of castings, and 48,482 tons of other rolled products.

Steelmaking Spreads Over Three More States

MORE COMPANIES are making steel now than in 1939, according to figures published by the American Iron & Steel Institute. Some 84 companies are listed as steel ingot producers, a gain of 11 in 14 years.

A table on this page shows that more states now produce steel—27 as compared with 24 in 1939. The significant increase has resulted in a 44 per cent rise in steelmaking capacity since World War II began. Where 128 plants turned out the nation's steel before, 143 plants now pour steel, often in newly developed areas.

New States—Recent expansion has added Oregon, Utah and Tennessee to the list of steelmaking states. California gained four plants in 14 years. Texas and Washington added two each. With no state reporting a decline, 19 states added to their capacities in 1952. By districts, the West advanced most rapidly since 1939 with a 231 per cent capacity gain.

The Pittsburgh-Youngstown district holds to its lead in pouring steel. Of a total capacity of 117.5 million tons, that section of the country should produce 43.6 million tons this year. The Chicago area is second with a capacity of 24.9 million tons, and the Eastern section follows with 23.8 million tons.

Larger Share—As steel-producing firms grow in number, the largest company's share of national capacity dipped from 35.3 per cent in 1939 to 31 per cent on Jan. 1, 1953.

The 11 largest companies in 1939 have increased combined capacity about 40 per cent, but capacity of all other companies rose nearly 66 per cent.

Ore Supplies—Prospects are bright for this year's steelmaking, AISI figures show. Shipments of iron ore are increasing from Venezuela, Cuba and Liberia and progress was made toward development of new iron ore properties, taconite and beneficiation plants.

If steel output continues at the rate of the first three months of this year, a new yearly record will be set. The industry had made about 9,478,000 tons of ingots and steel for castings by Mar. 29, the highest total on record for that period.

Ingots and Steel For Castings Annual Capacities—Net Tons

State	Capacity Jan. 1, 1953	Tons Gained Since 1939
Alabama	4,345,520	1,733,680
California	3,343,000	2,494,869
Colorado	1,485,000	376,200
Connecticut	188,280	26,126
Delaware	494,570	71,210
Georgia	300,000	146,515
Illinois	9,720,600	2,826,780
Indiana	13,692,000	3,495,323
Kentucky	1,766,500	668,900
Maryland	5,534,000	2,162,800
Massachusetts	275,000	62,200
Michigan	5,805,900	2,309,674
Minnesota	918,000	582,000
Missouri	630,000	60,458
New Jersey	242,100	10,820
New York	6,094,700	2,109,740
Ohio	22,643,260	5,100,252
Oklahoma	70,920	14,920
Oregon	110,000	110,000
Pennsylvania	33,351,560	7,101,238
Rhode Island	93,000	25,800
Tennessee	38,000	38,000
Texas	1,269,720	1,264,815
Utah	1,675,000	1,675,000
Virginia	12,000	8,752
Washington	450,000	276,400
West Virginia	2,998,840	966,040
Total	117,547,470	35,718,512

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

3260 tons, Creedmore Hospital, Queens, New York city, through Wilaka Construction Co., general contractor, to Grand Iron Works, that city.

3200 tons, thruway bridges, Albany county, New York, to Phoenix Bridge Co., Phoenixville, Pa., through Lane Construction Co., Meriden, Conn., general contractor.

2250 tons, maintenance hangar, Barksdale Field, Shreveport, La., to American Bridge Division, U. S. Steel Corp., Pittsburgh; Milt J. Choate & Co., Tyler, Tex., general contractor.

1670 tons, girder spans, Sandusky bridges, Ohio Turnpike Authority, to Allied Structural Steel Companies, Chicago.

1292 tons, state thruway bridge work, Genesee county, New York, through Johnson, Drake & Piper Inc., to Ernst Construction Co., Buffalo.

1255 tons, plant, Phelps Dodge Corp., Yonkers, N. Y.; to Bethlehem Steel Co., Bethlehem, Pa.

1226 tons, building trusses, General Electric Realty Co., Tyler, Tex., to Consolidated Western Division, U. S. Steel Corp.

800 tons, thruway bridges, Albany county, New York, to Phoenix Bridge Co., Phoenixville, Pa., through Monroe & Langstroth, Boston, general contractor.

650 tons, Public School No. 2, Bronx, New York city, through Grayco Builders, general contractor, to Simon Holland & Sons Inc., Brooklyn, N. Y.

625 tons, state thruway bridge work, Albany and Schenectady counties, New York, through D. D. Frione Co., general contractor, to Ernst Construction Co., Buffalo.

615 tons, power plant No. 3, Edison Services, New York, at Strauss, Kans., to Stupp Bros. Bridge & Iron Co., St. Louis.

500 tons, turbine generator foundations for Public Service Gas & Electric Co., Newark, N. J., at Burlington, N. J., to American Bridge Division, U. S. Steel Corp., Pittsburgh.

300 tons, additional troop facilities, Ft. Dix, N. J., through Arthur Fenneri Co., general contractor, to an unnamed fabricator.

260 tons, high school building, North Andover, Mass., to Builder's Iron Works, Somerville, Mass.; Rich Bros. Construction Co., Boston, general contractor.

240 tons, spillway gates, Box Canyon dam, Willamette Iron & Steel Co., Portland, Oreg., low $339,258 to Pend Oreille County

(Turn to page 212)

RAILROAD EQUIPMENT—*FOR SALE*

USED AS IS RECONDITIONED

STANDARD GAUGE FREIGHT CARS

Box, Steel Sheathed, 40-Ton Capacity
Box, Double Sheathed, 50-Ton Capacity
Box, Single Sheathed, 50-Ton Capacity
Flat, 50-Ton, Steel Underframe, 40'6" Long
Gondolas, Composite, or All Steel 50-Ton and 70-Ton
Hoppers, Twin, All-Steel, 50-Ton, Cross Dump
Ore Hoppers, All-Steel, 50-Ton, Heavy Duty
Tank, 3,000 Gallon, High Pressure
Tank, 8,000-Gallon, Coiled and Non-Coiled

Hoppers, All-Steel, 70-ton, Triple Hopper Cross Dump

EXTRA LONG FLAT CARS

40 & 50-Ton Capacity, Length 70' and 74'

STANDARD GAUGE AIR DUMP CARS

Side Dump, 20-Yd., 40-Ton, Lift Door
End Dump, 20-Yd., 50-Ton, Drop Door
Side Dump, 30-YD., 50-TON, DROP DOOR

CABOOSE CARS

Eight Wheel, Cupola Type

OTHER EQUIPMENT

Jordan Spreader
Locomotive Cranes
Overhead Cranes
Railroad Track Scales

STANDARD GAUGE DIESEL-ELECTRIC ROAD SWITCHING LOCOMOTIVE

300 H.P., 70-Ton, Type 0-4-4-0
NEW AND RELAYING RAIL

Send us your inquiries **WE BUY FREIGHT CARS FOR DISMANTLING** ***Send us your offerings***

IRON & STEEL PRODUCTS, INC.

REPAIR PARTS For All Types of Freight Cars

General Office
13462 S. Brainard Ave.
Chicago 33, Illinois
Phone: BAyport 1-3456

New York Office
50-D. Church Street
New York 7, N. Y.
Phone: BEekman 3-8230

STORAGE TANKS
6,000 Gallon
8,000 Gallon
10,000 Gallon

"ANYTHING containing IRON or STEEL"

CLASSIFIED ADVERTISING

Help Wanted

PROCESS CONTROL METALLURGIST with some experience in Open Hearths and Plate Mills for eastern steel plant. Write Box 703, STEEL, Penton Bldg., Cleveland 13, Ohio.

SALESMEN WANTED

We have two or three positions open for salesmen with ferrous and non-ferrous experience in the Chicago or Middle West territory. Prefer men with brass or aluminum backgrounds. Position can lead to Department Manager. Send complete resume in first letter. Write Box 705, STEEL, Penton Bldg., Cleveland 13, Ohio.

SALES EXECUTIVE

Manufacturer of steel joists, deck and culvert pipe; steel fabricator of structural, reinforcing and miscellaneous iron; warehousing of related steel specialties. Operation 9 southwestern states; present volume 3000 tons monthly. Position requires promotion of products to architects and engineers, and selling to contractors and owners. Prefer man 35 to 45 years. Excellent opportunity for experienced producer. Write Box 710, STEEL, Penton Bldg., Cleveland 13, Ohio.

PRODUCTION MANAGER

Steel fabricator of structural, reinforcing and miscellaneous iron for the construction industry. At present processing 3000 tons per month. Need energetic man with rich experience background. Splendid opportunity for future development. Position now open due to retirement and unexpected serious illness. Age range 35 to 45 years. Location southwest. Write Box 711, STEEL, Penton Bldg., Cleveland 13, Ohio.

WANTED: FURNACE PLANT SUPERINTENDENT

Experienced plant manager with production experience and the functions of management. The plant is located in the middle west and manufactures coal, oil and gas heating equipment. Write Box 711, STEEL, Penton Bldg., Cleveland 13, Ohio.

CLASSIFIED RATES

All classifications other than "Positions Wanted," set solid, minimum 50 words, $12.50 each additional word .25; all capitals, minimum 50 words $16.00 each additional word .32; all capitals leaded, minimum 50 words $19.50, each additional word .39. "Positions Wanted" set solid, minimum 25 words, $3.00, each additional word .12; all capitals, minimum 25 words $3.75, each additional word .15; all capitals, leaded, minimum 25 words $4.50, each additional word .18. Keyed address takes seven words. Cash with order necessary on "Positions Wanted" advertisements. Replies forwarded without charge. These rates are subject to 15 per cent agency commission and 2 per cent cash discount ten days. Displayed classified rates on request. Address your copy and instructions to STEEL, Penton Bldg., Cleveland 13, Ohio.

Accounts Wanted

MANUFACTURERS REPRESENTATIVE

Available to represent machine tool or industrial line manufacturer in Chicago and surrounding territories. Have excellent background in drilling and tapping equipment. Reply to Box 709, STEEL, Penton Bldg., Cleveland 13, Ohio.

SALES REPRESENTATIVE, METALLURGICAL ENGINEER, well established in Chicago area, with wide acquaintance in Chemical, Pharmaceutical, and Food Process Industries, desires additional account. Specialist in corrosion resistant metals. Write Box 709, STEEL, Penton Bldg., Cleveland 13, Ohio.

MANUFACTURERS REPRESENTATIVE

Mature aggressive college man desires one additional line. Four years' experience in the industrial field calling on accounts in northern Ohio. Presently carrying but one line thus insuring intensive coverage. Write Box 715, STEEL, Penton Bldg., Cleveland 13, Ohio.

Positions Wanted

EXECUTIVE EXPERIENCED AS PLANT MANAGER with cost and production experience. Sound industrial background in administrative and management functions. 25 years' experience. B.S. Degrees M.I.T. Write Box 693, STEEL, Penton Bldg., Cleveland 13, Ohio.

FOREMAN—WOOD PATTERNMAKING OR PURCHASING PATTERNS AND CASTINGS

Twenty-two years as foreman and department manager in wood patternmaking in the medium to heavy iron and steel industry (foundry background and foundry connections), including also ten years purchasing patterns and castings, expediting and coordinating. Experience on patterns for the machine tool industry, power presses, rolling mill equipment, etc. Best of references from wherever pattern equipment was used. Write Box 707, STEEL, Penton Bldg., Cleveland 13, Ohio.

FACTORY MANAGER—Age 42 diversified experience in management, engineering, and manufacturing in metal fabrication and machine tooling and mass assembly operations in appliance and electronic fields. Seasoned in Multi-plant operations covering all phases of manufacturing and engineering. Write Box 712, STEEL, Penton Bldg., Cleveland 13, Ohio.

ELECTRIC FURNACE MELTING SUPERINTENDENT desires to enter into sales. Eighteen years practical and technical experiences in operations. Excellent contacts in ingot shops and steel foundries. Would consider selling Fe. Alloys, Electrodes, Refractories or allied products. Write Box 713, STEEL, Penton Bldg., Cleveland 13, Ohio.

SOAKING PIT — BLOOMING MILL FOREMAN

Experienced man to take charge of soaking pits and blooming mill for steel plant in Ohio Valley. Soaking pit experience paramount. Give age, experience, and compensation expectancy.

Write Box 706, STEEL
Penton Bldg. Cleveland, Ohio

MAKE IT A HABIT

To read the classified pages of STEEL each week. You will find listed there surplus materials and used equipment for sale which may fill your requirements to a tee and save you much time and effort locating them.

FOR SALE

Cleveland No. 3 Double Angle Shear, capacity 6x6 x ¾ angles. Good condition.

ST. JOSEPH STRUCTURAL STEEL CO.
Box 68, Station A, St. Joseph, Mo.

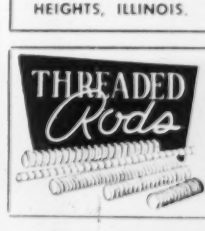
NEW PIPE

Warehouse Stocks of STANDARD • MERCHANT LAP WELD • SEAMLESS BUTTWELD • SPIRAL WELD

L. B. FOSTER CO.
HOUSTON 2, TEX. CHICAGO 4, ILL.
PITTSBURGH 30, PA. NEW YORK 7, N.Y.

CARBON STEEL STRIP

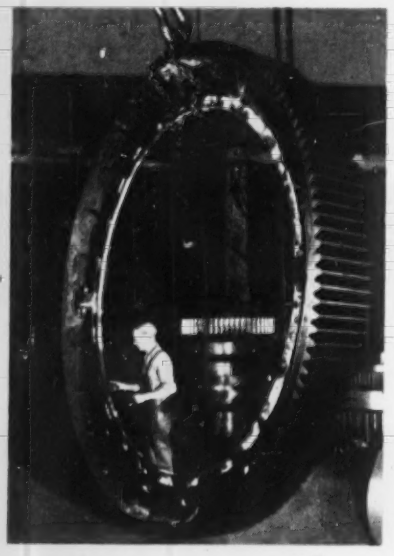
86,000 lbs. in 100 lb. coils. Size—.022 x .566. Cold rolled 0.10% carbon, Silicon killed strip, No. 2 finish, No. 3 edge, No. 4 Temper. Write or wire MR. MORRISEY, AMSCO, CHICAGO HEIGHTS, ILLINOIS.



10 to 12 ft. lengths
ALL METALS
Also Screw Machine Products to Order
EASTERN
Machine Screw Corp.
New Haven, Conn.
Makers of H & G Die Heads

FAST SERVICE on

Large CUT Gears



Simonds Gears

• Spur • Bevel
• Mitre • Worms
• Worm Gears
• Racks • Pinions

With the experience of more than 60 years of gear-making specialization . . . Simonds is geared to give you fast, custom service in diameters up to 145". Count on Simonds for quick delivery on gears for new equipment . . . for special machinery . . . for repairs and replacements.

SIMONDS GEARS

SIMONDS also is stock carrying distributor for Ramsey Silent Chain Drives and Couplings; and industrial V-Belts.

THE SIMONDS GEAR & MFG. CO.
LIBERTY at 25TH PITTSBURGH 22, PA.

(Continued from page 210)

Public Utility Department, Washington state.

250 tons (estimated) capacitator rack equipment, Gunderson Bros. Engineering Corp., Portland, Oreg., low $287,705 to Bonneville Power Administration.

240 tons, plant addition, Johnson & Johnson, Metuchen, N. J., through the John W. Ryan Construction Co. Inc., general contractor, to White Plains Iron Works, White Plains, N. Y.

235 tons, manufacturing building addition, Bucyrus, O., through Wigton-Abbott Construction Co., New York, engineer, to Bethlehem Contracting Co., Bethlehem, Pa.

205 tons, thruway bridge, Orange county, New York, to Phoenix Bridge Co., Phoenixville, Pa., through John Arborio Co., Poughkeepsie, N. Y., general contractor.

200 tons, thurway bridge, New York, to Phoenix Bridge Co., Phoenixville, Pa., through Lane Construction Co., Meriden, Conn.

180 tons, electrical tower work, Joppa, Ill., placed by Blasco Services, New York, with Muskogee Iron Works, Muskogee, Okla.

175 tons, consolidated elementary school, Essex, Conn., to New England Iron Works Inc., New Haven, Conn.; A. F. Peaslee Inc., Hartford, Conn., general contractor.

170 tons, 2-story office building, 100 Wall St., New York, through A. H. Bienenstock to a Brooklyn, N. Y., fabricator.

160 tons, city of Manchester, N. H., to American Bridge Division, U. S. Steel Corp., Pittsburgh, through Harvey Construction Co., Manchester, general contractor.

130 tons, building, Hollingshead Corp., Camden, N. J., to Cantle & Co., that city.

100 tons, Cumberland Mills bridge, Camden, Me., to Bethlehem Steel Co., Bethlehem, Pa., direct from the State Highway Department.

STRUCTURAL STEEL PENDING

3,600 tons, municipal hospital, Newark, N. J., Schaefer Steel Construction Inc., New York, low bidder.

3,500 tons, Mannheim road overpass over Proviso freight yard of Chicago & North Western railroad, Cook county, for state of Illinois; bids Apr. 24.

2000± tons, penstocks, stoplogs, etc., Lookout Point dam, Oregon; bids in.

1700 tons, heating and power plant, Elmendorf Air Base, Alaska; Patti-MacDonald Construction Co., Seattle, low $12,460,000 to U. S. Engineer.

1600 tons, state bridge work, under schedule 3, York county, Pennsylvania; bids Apr. 24; 1250 tons, schedule 1, and 230 tons schedule 2.

1150 tons, University of Oregon training hospital, Portland, Oreg.; Donald M. Drake Co., Portland, low.

950 tons, mostly bridge beams, also 125 tons structural plates; bids in to the Corps of Engineers, Pittsburgh, inv. 311B.

350 tons, Dexter reregulating dam, Willamette river, Oregon; general bids in to U. S. Engineer, Portland, Oreg.

200 tons, including reinforcing and pump equipment, Crow Creek pumping plant; bids to Bureau of Reclamation, Townsend, Mont., May 7.

141 tons, state bridge work, Butler county, Pennsylvania; bids May 1.

100 tons, approximately, state highway bridge, Somerset county New Jersey; bids Apr. 22.

100 tons, organizational maintenance shop, Elelson Field, Alaska, general contract to United Contractors, Fairbanks, Alaska, low $500,000.

100 tons, including H piling, steel rails and reinforcing, two bridges Richardson Highway, Alaska; materials government-furnished; bids to Alaska Road Commission, Juneau, May 5.

Unstated, steel frame addition to power plant and facilities, Kodiak Navy base, Alaska; Sam Bergesen, Tacoma, Wash., low $2,220,000 to 17th naval district.

REINFORCING BARS . . .

REINFORCING BARS PLACED

290 tons, maintenance hangar, Barksdale Field, Shreveport, La., to Ceco Steel Products Co., New Orleans; Milo J. Choate & Co., Tyler, Tex., general contractor.

250 tons, high school building, North Andover, Mass., to Truscon Steel Co., Boston; Rich Bros. Construction Co., Boston, general contractor.

180 tons, elementary-high school building, Manchester, Conn., to Bethlehem Steel Co., Bethlehem, Pa.; Wadhams & May Co., Hartford, Conn., general contractor; Hazrmann Structural Steel Co., Holyoke, Mass., 50 tons structural steel.

150 tons, Ladd air field laundry and cleaning plant, Alaska, to Bethlehem Pacific Coast Steel Corp., Seattle; Lytle & Green Construction Co., Seattle, general contractor.

140 tons, two bridges, state and federal, in Washington state, to Northwest Steel Rolling Mills Inc., Seattle.

REINFORCING BARS PENDING

800 tons, Garden State Parkway, contract 37, section 7, Monmouth county, New Jersey; bids Apr. 23.

800 tons, heating and power plant, Elmendorf Air Base, Alaska; general contract to Patti-MacDonald Construction Co., Seattle.

615 tons, substructures for nine bridges, West Virginia turnpike, Fayette county; bids Apr. 21, Charleston, W. Va.

500 tons, reinforced concrete highway and bridge, North Kingstown, R. I.; bids in, Providence, R. I.

442 tons, State Garden Parkway, contract 40, section 7, Monmouth county, New Jersey; bids Apr. 30.

432 tons, Garden State Parkway, contract 38, section 7, Monmouth county, New Jersey; bids Apr. 30.

378 tons, state bridge work, Cameron and Potter counties, Pennsylvania; bids May 1.

300 tons, Seattle University dormitory; John H. Sellen Construction Co., low base $812,549.

285± tons, state highway bridge, Bangor-Brewer, Me.; bids Apr. 29, Augusta, Me.

255 tons, state bridge work, Butler county, Pennsylvania; bids May 1.

170 tons, Garden State Parkway, contract 60, section 10, Ocean county, New Jersey; bids May 4.

157 tons, Garden State Parkway, contract 24, section 10, Ocean county, New Jersey; bids opened Apr. 9.

105 tons, bridge, Shetucket river, Norwich, Conn.; bids Apr. 20, Hartford, Conn.

PLATES . . .

PLATES PENDING

4085± tons, including 125 tons boiler plate, balance structural; bids in to the Corps of Engineers, Pittsburgh, inv. 318B.

330 tons, structural plates, Corps of Engineers, Pittsburgh; bids in inv. 329B.

225 tons, storage tanks, etc., Big Delta project, Alaska; bids to U. S. Engineer, Apr. 14.

160 tons, 250,000 gallon capacity, 70 ft elevated water standpipe, district No. 64, Auburn, Wash; bids Apr. 23; Metcalf & Harstad, Seattle, engineers.

PIPE . . .

CAST IRON PIPE PLACED

418 tons, 20 inch, expansion project, Bellingham, Wash., to Pacific States Cast Iron Pipe Co., Seattle.

200 tons, various sizes, for Grants Pass, Oreg., to H. G. Purcell, Seattle, for U. S. Pipe & Foundry Co., Burlington, N. J.

RAILS, CARS . . .

LOCOMOTIVES PLACED

New York Central, 164 diesel electric locomotive units, to Electro-Motive Division General Motors Corp., La Grange, Ill., and American Locomotive Co., Schenectady, N. Y.; 34 units will be 2250 hp passenger engines; 80 will be 1500 and 1600 hp road switchers; 15 will be 1500 and 1600 hp units for freight and switching service; and 35 will be 1000 hp yard switchers. Of the new diesels, 124 will be used by the New York Central itself and 40 by the affiliated Pittsburgh & Lake Erie.

RAILROAD CARS PLACED

Texas & Pacific, 250 fifty-ton box cars to its Marshall shops.

RAILS PLACED

Jersey Central Lines, 1210 tons, to Bethlehem Steel Co., Bethlehem, Pa.

Advertising Index

Accurate Perforating Co. 198
Air Products, Inc. 174
Ajax Electrothermic Corporation 100
Alliance Machine Co., The 122
American Brass Co., The 129
American Gas Association 154
American Machine & Metals, Inc., Riehle Testing Machines Division 141
American Nickeloid Co. 26
American Screw Co. 144
Armco Steel Corporation 62
Austenal Laboratories, Inc., Microcast Division 163

Bailey, William M., Co. 138
Baker, J. E., Co., The 117
Baldwin-Lima-Hamilton Corporation 164
Baldwin-Lima-Hamilton, Standard Steel Works Division 32
Barium Steel Corporation 2
Beatty Machine & Mfg. Co. 142
Beloit Foundry Co. 176
Bethlehem Steel Co. 1
Brooks Oil Co., The 170
Browning, Victor R., & Co., Inc. 206
Bullard Co., The 80

Cady, E. J., & Co. 87
Carborundum Co., The 120, 121
Carpenter Steel Co., The 115
Chain Belt Co. 46
Chambersburg Engineering Co. 56
Champion Rivet Co., The 199
Cincinnati Shaper Co., The 27
Clark Controller Co., The 33
Cleveland-Cliffs Iron Co., The 42
Cleveland Steel Tool Co., The 202
Cleveland Vibrator Co. 169
Cleveland Worm & Gear Co., The Inside Back Cover
Colorado Fuel & Iron Corporation, The, Wickwire Spencer Steel Division 49
Columbia-Geneva Steel Division, United States Steel Corporation 51
Columbia Steel & Shafting Co., Summerill Tubing Company Division 52
Conco Engineering Works Division of H. D. Conkey & Co. 101
Continental Foundry & Machine Co. 107
Copperweld Steel Co. 83
C-O-Two Fire Equipment Co. 162
Crucible Steel Company of America 41, 157
Cutler-Hammer, Inc. Back Cover

Danly Machine Specialties, Inc. 134, 135
Denison Engineering Co., The 7
Detroit Stamping Co. 202
Diamond Mfg. Co. 202
Differential Steel Car Co. 156
Disston, Henry, & Sons, Inc. 37
Dracco Corporation 53
Dravo Corporation 54
Du Pont, E. I., de Nemours & Co., Inc. 43

Eastern Machine Screw Corporation, The 206, 211
Eaton Manufacturing Co., Reliance Division 108
Ederer Engineering Co. 137
Elastic Stop Nut Corporation of America 105
Electric Controller & Mfg. Co., The Inside Front Cover
Enthone, Inc. 103
Erie Bolt & Nut Co. 203

Firestone Steel Products Co. 65
Follansbee Steel Corporation 124
Foster, L. B., Co. 211

Continued on following page

NON-FLUID OIL

TRADE MARK REGISTERED

Saves Production Time, Increases Output

Production is "machine-plus-man-hours." Both are lost when machines are down — or slow down.

When NON-FLUID OIL is used, production goes up and lubricant costs go down. NON-FLUID OIL does not drip or leak, keeps bearings cool and outlasts ordinary oil many times over.

Ordinary oil cuts production because it runs out as fast as it is applied, so does not lubricate dependably, and needs frequent, time - consuming application. Bearings run hot, waste power and often burn out — machines and man hours are lost.

NON-FLUID OIL is made in grades to exactly suit every lubrication need. In proof of claims, let us send free testing sample and informative bulletin on NON-FLUID OIL.

NEW YORK & NEW JERSEY LUBRICANT COMPANY

292 Madison Ave., New York 17, N. Y. • Works: Newark, N. J.

WAREHOUSES: Atlanta, Ga. • Birmingham, Ala. • Charlotte, N. C. • Chicago, Ill. Columbus, Ga. • Detroit, Mich. • Greensboro, N. C. • Greenville, S. C. • Providence, R. I. • St. Louis, Mo.—Also represented in most other industrial centers, including Cleveland, Ohio • Cincinnati, Ohio • Pittsburgh, Pa. • Syracuse, N. Y.

NON-FLUID OIL is not the name of a general class of lubricants, but is a specific product of our manufacture.

...make gloves last

3 to 5 times LONGER!

BEFORE

LEATHER

RUBBER OR COTTON

How Much Will This Reduce Your Yearly GLOVE Cost?

AFTER

THIS IS WHAT "WASH-RITE" DOES...

Throw all your dirty, worn leather, rubber or cotton gloves in our steel drum. Ship to us. We correctly clean, sterilize, *COMPLETELY REPAIR*, sort, reshape, pair and ship them back to you as serviceable as new. Depending upon the gloves and their usage, gloves are being re-claimed by us 3 to 5 times. We specialize only in laboratory controlled re-claiming of rubber, leather and cotton gloves, aprons and clothing. *Write for literature.*

10 Years of Proven Service

YOUR GOODS FULLY INSURED . . . WORK GUARANTEED

. . . it costs you nothing to find out. SEND US A FREE TRIAL ORDER

Wash-Rite Company, Inc.

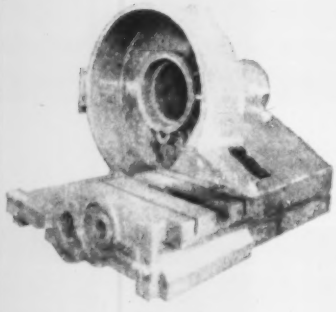
1412-26 CORNELL AVENUE • INDIANAPOLIS 2, INDIANA

Hyde Park

RED CIRCLE Rolls ALLOY-CHILLED

Gray Iron Castings

Castings of any size up to 80,000 pounds. Hyde Park facilities are equal to your every requirement



Machine Castings
Lathe Beds
Housings
Pinion Housings
Mill Housings
Shoe Plates
Layout Plates
Surface Plates

Hyde Park

FOUNDRY & MACHINE CO.
Hyde Park, Westmoreland County, Pa.
ROLLS
ROLLING MILL MACHINERY
GREY IRON CASTINGS

Advertising Index

Concluded from preceding page

Gardner-Denver Co. 48
Gardner Machine Co. 23
General Cable Corporation 146, 147
General Electric Co. 44, 45
Gisholt Machine Co. 40
Gorham Tool Co. 12
Graver Tank & Mfg. Co., Inc. 132
Gulf Oil Corporation 187
Gulf Refining Co. 187

Hansen Manufacturing Co., The 55
Hendrick Manufacturing Co. 191
Houghton, E. F., & Co. 183
Hyde Park Foundry & Machine Co. 214
Hydraulic Press Mfg. Co., The 177

Illinois Clay Products Co. 93
Insul-Mastic Corporation of America 11
Iron & Steel Products, Inc. 211

Jones & Lamson Machine Co. 36
Jones & Laughlin Steel Corporation 165

Kaiser Aluminum & Chemical Sales, Inc. 172, 173
Kaiser Aluminum & Chemical Sales, Inc., Chemical Division 97
Kaiser Steel Corporation 149
Kidde, Walter, & Co., Inc. 10

Landis Machine Co., The 14
Lapointe Machine Tool Co., The 31
La Salle Steel Co. 21
Layne & Bowler, Inc. 13
Leeds & Northrup Co. 118
Lee Rubber & Tire Corporation, Republic Rubber Division 171
Levinson Steel Sales Co. 188
Lewis Machine Co., The 207
Lindberg Engineering Co. 57
Linde Air Products Co., A Division of Union Carbide & Carbon Corporation 4
Link-Belt Co. 50
Luria Brothers & Co., Inc. 209

McKay Machine Co., The 77

Macwhyte Co. 3
Mahon, R. C., Co., The 190
Mathews Conveyer Co. 194
Metal & Thermit Corporation 167
Miehle Printing Press & Mfg. Co., Star-Kimble Motor Division 102
Mine Safety Appliances Co. 207
Modern Engraving & Machine Co. 8, 9

National Carbon Co., A Division of Union Carbide & Carbon Corporation 94
National Steel Corporation 47
New York & New Jersey Lubricant Co. 213
Niagara Machine & Tool Works 24, 25
Norton Co. 17, 18, 19, 20, 34, 35

Oakite Products, Inc. 168
Ohio Locomotive Crane Co., The 202
Orton Crane & Shovel Co. 104

Parker-Kalon Corporation 22
Parker Rust Proof Co. 189
Pawtucket Manufacturing Co. 6
Penn Metal Co., Inc. 98
Peterson Steels, Inc. 145
Pittsburgh Lectromelt Furnace Corporation 99
Pittsburgh Plate Glass Co., Brush Div. 206
Pittsburgh Steel Co., Thomas Strip Division 195
Pheoll Manufacturing Co. 148
Precision Extrusions 5
Production Steel Co. 78

Reading Crane & Hoist Corporation 191
Reliance Division, Eaton Manufacturing Co. 108
Republic Rubber Division, Lee Rubber & Tire Corporation 171
Republic Steel Corporation 15, 193
Riehle Testing Machines Division of American Machine & Metals, Inc. 141
Roebling's, John A., Sons Corporation 29
Ryerson, Joseph T., & Son, Inc. 66

Salem-Brosius, Inc. 39
Sandvik Steel, Inc. 178
Sargeant & Wilbur, Inc. 16
Simonds Abrasive Co. 166
Simonds Gear & Mfg. Co., The 212
Sperry Products, Inc. 127
Standard Pressed Steel Co. 158, 159
Standard Steel Works Division, Baldwin-Lima-Hamilton 32
Star-Kimble Motor Division, Miehle Printing Press & Mfg. Co. 102
Summerill Tubing Company Division, Columbia Steel & Shafting Co. 52
Superior Steel Corporation 143

Tapecoat Co., The 160
Tennessee Coal & Iron Division, United States Steel Corporation 51
Texas Co., The 58
Thew Shovel Co., The 30
Thomas Strip Division, Pittsburgh Steel Co. 195
Timken Roller Bearing Co., The, Steel & Tube Division 84
Tinnerman Products, Inc. 88
Toledo Stamping & Manufacturing Co. 198
Topper Equipment Co. 198
Transue & Williams Steel Forging Corporation 91

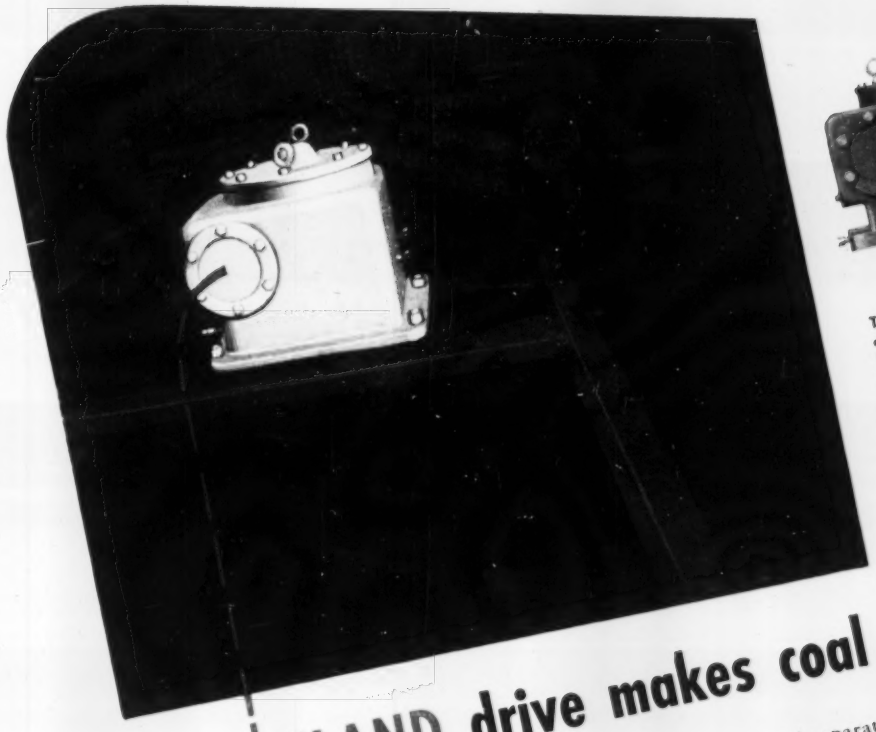
Union Carbide & Carbon Corporation, Linde Air Products Co. 4
Union Carbide & Carbon Corporation, National Carbon Co. 94
United Engineering & Foundry Co. 161
United States Steel Corp., Subsidiaries 51
United States Steel Export Co. 51
United States Steel Supply Division, United States Steel Corporation 51
Vanadium Corporation of America 153
Van Huffel Tube Corporation 131

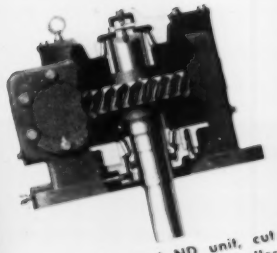
Walker, O. S., Co., Inc. 192
Warner & Swasey 28
Wash-Rite Co., Inc. 213
Weirton Steel Co. 47
Westinghouse Electric Corporation 136, 152
Westinghouse Electric Corporation, Sturtevant Division 61
Wheeling Steel Corporation 206
Wickwire Spencer Steel Division of The Colorado Fuel & Iron Corporation 49
Wise, Henry H., Co. 198
Worcester Stamped Metal Co. 192

Youngstown Sheet & Tube Co., The 38

Table of Contents, Page 5

Classified Advertising Page 211





The Cleveland ND unit, cut away to show tapered roller bearings on gear shaft, positive, face-type oil seal, piston type lubricating pump and oil drain at base of housing.

At left—Froth-Flotation Unit cleaning and reclaiming coal fines in a Pennsylvania anthracite coal preparation plant. Photo courtesy of Wilmot Engineering Company.

Steady CLEVELAND drive makes coal come clean

THIS Wilmot Froth-Flotation Unit cleans and separates marketable fine coal from high-ash particles and sludge. To create the cleansing froth that removes coal from refuse, the builder employs the vertical Cleveland worm gear drive shown at work above. No matter what the density of the feed, Cleveland drives the agitator smoothly and powerfully, day in day out, year after year.

Cleveland vertical worm gear drives—ND and its companion NU unit (with drive shaft upward)—are designed especially for agitator service. Equipped with heavy-duty tapered roller bearings on an over-sized shaft, dust-proof and moisture-proof, they operate dependably on the toughest jobs in the coal industry.

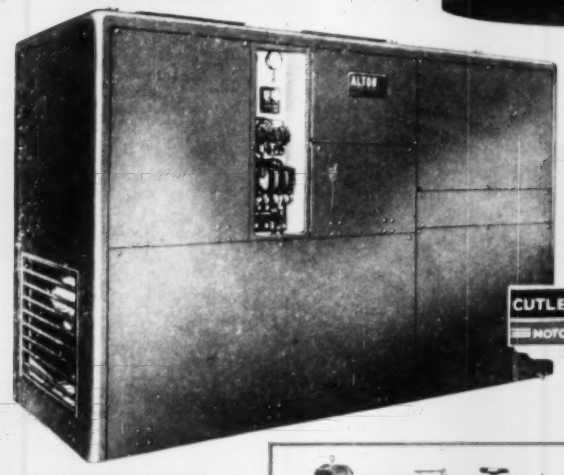
The reliable performance of these rugged units explains why coal machinery builders and users alike depend upon Cleveland wherever a steady right-angle drive is needed. Write today for Catalog 400 for description of these and other worm gear drives in the complete Cleveland line. The Cleveland Worm & Gear Company, 5270 East 80th Street, Cleveland 4, Ohio.

Affiliate: The Farval Corporation, Centralized Systems of Lubrication. In Canada: Peacock Brothers Limited.

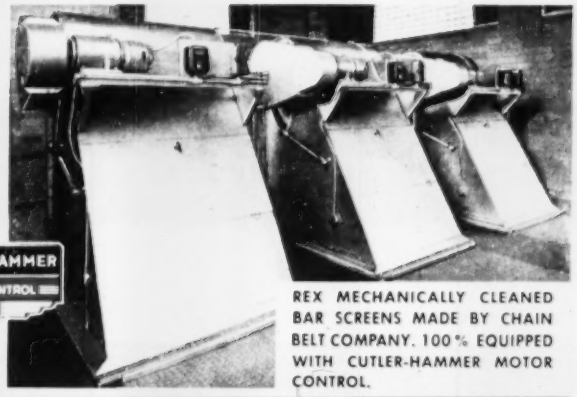
Choice of the Leaders

CUTLER·HAMMER
MOTOR CONTROL
C·H

The Mark of Better Machines



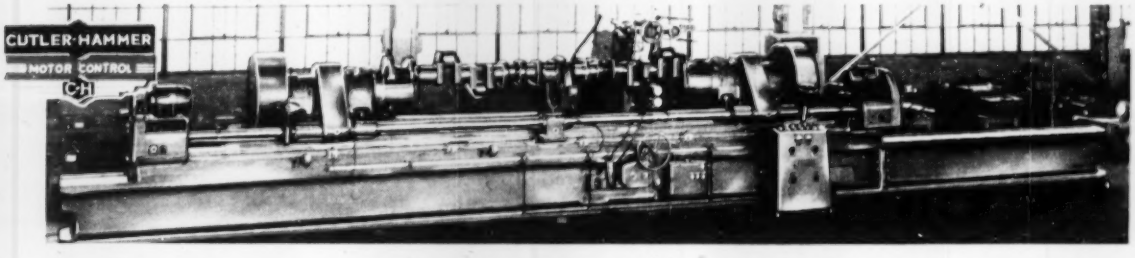
ALTON REFRIGERATED AIR CONDITIONER. COMPLETE LINE OF SIZES MADE BY ALTON MANUFACTURING COMPANY IS FULLY EQUIPPED WITH CUTLER-HAMMER MOTOR CONTROL.



REX MECHANICALLY CLEANED BAR SCREENS MADE BY CHAIN BELT COMPANY. 100% EQUIPPED WITH CUTLER-HAMMER MOTOR CONTROL.

PAIR OF END MATCHERS, UNITS IN A COMPLETE LINE OF WOODWORKING MACHINERY MADE BY S. A. WOODS MACHINE CO. MOTOR CONTROL 100% CUTLER-HAMMER.

LANDIS 40" x 216" HYDRAULIC GRINDING MACHINE MADE BY LANDIS TOOL CO. EQUIPPED WITH CUTLER-HAMMER MOTOR CONTROL.



The road to Leadership

A market leader does better business . . . makes more money. . . has a firmer foothold than much of his competition. These commercial and practical aspects of market leadership result from the market's continuing preference for the products that he makes. His products are simply rated as superior. They better meet the users' needs and requirements. But such performance can only reflect what's *in* the products. Therefore any manufacturer seeking to govern and so predict the performance of his product in the user's hands must know and dictate the quality of the parts. *This* is the way the manufacturer can influence his market. *This* is the road to leadership.

Under the circumstances it is not surprising that leading machinery manufacturers so continuously and repeatedly select Cutler-Hammer Motor Control for their machines. Known dependability is vital where leadership is to be maintained. And Cutler-Hammer Motor Control must be a profitable choice for you. CUTLER-HAMMER, Inc., 1211 St. Paul Ave., Milwaukee 1, Wisconsin. *Associate:* Canadian Cutler-Hammer, Ltd., Toronto, Ontario.